40075

National Library of Canada / Bibliothèque nationale du Canada

CANADIAN THESES ON MICROFICHE / THÈSES CANADIENNES SUR MICROFICHE

NAME OF AUTHOR/*NOM DE L'AUTEUR* Muriel Isabella Avery

TITLE OF THESIS/*TITRE DE LA THÈSE* Psychodynamics of Obesity Related to Clothing Preferences

UNIVERSITY/*UNIVERSITÉ* University of Alberta

DEGREE FOR WHICH THESIS WAS PRESENTED/ *GRADE POUR LEQUEL CETTE THÈSE FUT PRÉSENTÉE* Master of Science

YEAR THIS DEGREE CONFERRED/*ANNÉE D'OBTENTION DE CE GRADE* 1978

NAME OF SUPERVISOR/*NOM DU DIRECTEUR DE THÈSE* Dr. Anne Kernaleguen

Permission is hereby granted to the NATIONAL LIBRARY OF CANADA to microfilm this thesis and to lend or sell copies of the film.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

*L'autorisation est, par la présente, accordée à la BIBLIOTHÈQUE NATIONALE DU CANADA de microfilmer cette thèse et de prêter ou de vendre des exemplaires du film.*

*L'auteur se réserve les autres droits de publication; ni la thèse ni de longs extraits de celle-ci ne doivent être imprimés ou autrement reproduits sans l'autorisation écrite de l'auteur.*

DATED/*DATÉ* Sept 14, 1978 SIGNED/*SIGNÉ* Muriel Avery

PERMANENT ADDRESS/*RÉSIDENCE FIXÉ* 1185 Northmount Dr., N.W., Calgary, Alberta, T2L 0C5

NL-91 (3-74)

National Library of Canada

Cataloguing Branch
Canadian Theses Division

Ottawa, Canada
K1A 0N4

Bibliothèque nationale du Canada

Direction du catalogage
Division des thèses canadiennes

## NOTICE

The quality of this microfiche is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us a poor photocopy.

Previously copyrighted materials (journal articles, published tests, etc.) are not filmed.

Reproduction in full or in part of this film is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30. Please read the authorization forms which accompany this thesis.

THIS DISSERTATION
HAS BEEN MICROFILMED
EXACTLY AS RECEIVED

## AVIS

La qualité de cette microfiche dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de mauvaise qualité.

Les documents qui font déjà l'objet d'un droit d'auteur (articles de revue, examens publiés, etc.) ne sont pas microfilmés.

La reproduction, même partielle, de ce microfilm est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30. Veuillez prendre connaissance des formules d'autorisation qui accompagnent cette thèse.

LA THÈSE A ÉTÉ
MICROFILMÉE TELLE QUE
NOUS L'AVONS REÇUE

# THE UNIVERSITY OF ALBERTA

# PSYCHODYNAMICS OF OBESITY RELATED TO CLOTHING PREFERENCES

by

© MURIEL ISABELLA AVERY

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF SCIENCE

IN

CLOTHING AND TEXTILES

FACULTY OF HOME ECONOMICS

EDMONTON, ALBERTA

FALL, 1978

'my clothes keep my various selves buttoned up together and enable all these otherwise irreconcilable aggregates of psychological phenomenon to pass themselves off as one person' [Logan Pearsall Smith: More Trivea, "Reassurance"]

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, a thesis entitled Psychodynamics of Obesity Related to Clothing Preferences submitted by Muriel Isabella Avery in partial fulfillment of the requirements for the degree of Master of Science.

A. Kendall
Supervisor

E. A. Donald.

W. Lefebvre

R. Beam

Date July 20, 1978

To

Dr. Edith Rowles Simpson

Dean Emeritus

College of Home Economics

University of Saskatchewan

## Abstract

Psychodynamics of Obesity
Related to Clothing Variables

by

Muriel I. Avery, Master of Science
University of Alberta, 1978
Major Professor: Dr. Anne P. Kernaleguen
Faculty of Home Economics
Division: Clothing and Textiles

The purpose of this exploratory research was to establish if women of different weight histories and current weight differ significantly from each other with regards to psychological, physical, and clothing variables. The theoretical framework was based largely on Fisher and Cleveland's theory that obese individuals, because of a noticeable deviation from the cultural standard of body size, may perceive themselves and others differently than the individual whose body measurements closely conform to that of the ideal body size. This difference in turn may relate to psychological variation and a difference in clothing preferences.

Four groups of women were selected on the basis of actual weight, weight histories and age. The four groups were: the control group, women who had maintained normal weight throughout life; obese women who had reduced to

normal weight; women, who after the age of 20 years, became obese; and women who had been obese since childhood or adolescence. The non random sample of 80 women, thirty to sixty-five years of age, from Edmonton and Calgary, Alberta, was chosen by personal contact or were volunteers from weight reduction groups.

The selected variables were actual weight, percentage body fat as determined by the skinfold technique, percentage standard weight, locus of control, anxiety, Barrier and Penetration, body image, fabric and style preference, and a dream costume. The tests were administered in one session of approximately two hours in length. The testing was completed in August and December of 1974 in Edmonton and Calgary, Alberta. Statistical analysis was done at the University of Alberta Computing Centre.

The Analysis of Covariance, with age as covariate, indicated significant differences among the groups for the following variables: percentage body fat; actual scale weight; percentage standard weight; preference for saturated color, tint and loose style. The Pearson product-moment correlation analysis revealed that for each group there were certain relationships among the physical, psychological, and clothing variables. For the total group, general patterns evolved regarding the interrelationship of color, fabric texture and design, and style. Some relationships with the psychological variables were discerned. The Draw

A Person technique indicated that obese persons can be identified by their figure drawings and that the former body image is operative in individuals where there has been a weight change.

These findings verify the theory that there are differences in fabric and style preferences among the four weight groups. Furthermore, these preferences are associated with the psychological as well as the physical structure of each individual.

## Acknowledgements

Sincere appreciation is expressed to the thesis committee for their unfailing assistance. Gratitude is expressed to Dr. Anne Kernaleguen, major professor, who gave generously of her time and energy and who was most patient and helpful throughout this thesis project. Thanks are also extended to Dr. V. Lefebrve, Dr. E. Donald and Dr. D. Spearman, for their assistance and suggestions for this research project. Appreciation is also extended: to Dr. S. Fisher, Upstate Medical Center, Syracuse, for making the Holtzman protocols; to Dr. William H. James, Department of Psychology, The University of Saskatchewan, Saskatoon, for permission to use the Locus of Control instrument; to R. K. Kalkhoff, M.D., Director of TOPS Club Inc., Milwaukee; and to Dr. Charlotte Young, Division of Nutritional Sciences, Cornell University, for her helpful suggestions.

Sincere appreciation is also expressed to all those who volunteered to participate in this research project: the members of TOPS Club Inc., of Edmonton and Calgary, the members of hospital and other weight reduction groups, and to those who acted as the control group.

The author wishes to acknowledge all the work done by Mrs. Florence Knight and Mrs. Evelyn Peterson, both of Calgary; Florence who typed the manuscript and Evelyn who

read and reread it. Finally the author wishes to thank all the members of her family; mother, father, brothers, sisters and her children, for their encouragement and support while this thesis project was being completed.

TABLE OF CONTENTS


| | | Page |
|---|---|---|
| LIST OF TABLES | | xiii |
| LIST OF CHARTS | | xvi |
| LIST OF DIAGRAMS | | xvii |
| Chapter | | |
| I. | INTRODUCTION AND STATEMENT OF THE PROBLEM | 1 |
| II. | REVIEW OF LITERATURE | 3 |
| | Theories of Obesity and Problems of the Obese | 3 |
| | Physiological Factors | 4 |
| | Sociological Factors | 5 |
| | Psychological Factors | 7 |
| | Body Image | 7 |
| | Penetration | 18 |
| | Anxiety | 20 |
| | Locus of Control (Internal-External Control) | 22 |
| | Clothing Preferences | 26 |
| III. | METHODS AND PROCEDURES | 34 |
| | Theoretical Framework | 34 |
| | Definitions | 35 |
| | Objectives | 40 |
| | Assumptions | 41 |
| | Limitations | 41 |
| | Selection of the Sample | 42 |
| | Procedures | 42 |

| Chapter | | Page |
|---|---|---|
| | Description of the Instruments . . . . . | 43 |
| | General Information Questionnaire . . . | 43 |
| | The Holtzman Inkblot Technique . . . . . | 43 |
| | Draw A Person Test . . . . . | 48 |
| | The Institute for Personality and Ability Testing Anxiety Test . . . . . | 51 |
| | Locus of Control . . . . . | 52 |
| | The Compton Fabric Preference Test . . . | 54 |
| | The Style Preference Test . . . . . | 57 |
| | Dream Costume . . . . . | 59 |
| | The Skinfold Measurement as a Method of Determining Percentage of Body Fat . . | 61 |
| | Analysis of Data . . . . . | 63 |
| | Human Research Review . . . . . | 63 |
| | Null Hypotheses . . . . . | 64 |
| IV. | FINDINGS . . . . . | 66 |
| | Descriptive Analysis . . . . . | 66 |
| | Measures of Central Tendency for Physical Variables . . . . . | 66 |
| | Measures of Central Tendency for Clothing Variables . . . . . | 70 |
| | Measures of Central Tendency for Style Variables . . . . . | 79 |
| | Measures of Central Tendency for Psychological Variables . . . . . | 80 |
| | Measures of Central Tendency for Draw A Person Variables . . . . . | 84 |
| | Percentage by Categories For Dream Costume . . . . . | 88 |

| Chapter | | Page |
|---|---|---|
| | Statistical Analyses | 89 |
| | Chi Square | 89 |
| | Analysis of Covariance | 93 |
| | Intercorrelation Analysis | 96 |
| | Results of Null Hypotheses | 108 |
| V. | INTERPRETATIONS | 112 |
| VI. | SUMMARY AND RECOMMENDATIONS | 130 |
| | Summary | 130 |
| | Recommendations | 135 |
| BIBLIOGRAPHY | | 137 |
| APPENDICES | | 148 |
| A. | GENERAL INSTRUCTIONS TO SUBJECTS | 149 |
| B. | GENERAL INFORMATION QUESTIONNAIRE | 151 |
| C. | HEIGHT, WEIGHT, AND SKINFOLD MEASUREMENTS | 154 |
| D. | RELEASE FORM | 156 |
| E. | FRONT, BACK AND SIDE VIEW OF OUTLINE FIGURES OF FEMALE FORM FOR THE DRAW A PERSON TEST. | 158 |
| F. | AREAS, RATIOS AND PROPORTIONS USED FOR MARKING D A P TEST | 162 |
| G. | FORMULI FOR DETERMINING PERCENTAGE STANDARD WEIGHT AND PERCENTAGE BODY FAT FOR YOUNG WOMEN AND OLDER WOMEN | 164 |
| VITA | | 167 |

## LIST OF TABLES


| Table | | Page |
|---|---|---|
| 1 | Comparison of Range, Mean and Standard Deviation for Barrier Scores Obtained on the Holtzman Inkblot Test . . . . . | 45 |
| 2 | Comparison of Range, Mean and Standard Deviation for Penetration Scores Obtained from the Holtzman Inkblot Test . . . . . | 45 |
| 3 | Factor Analysis of James's I-E Scale . . . . . | 53 |
| 4 | Average Height of the Subjects in each Group . . . . . | 66 |
| 5 | Measures of Central Tendency for Age . . . . . | 67 |
| 6 | Measures of Central Tendency for Actual Weight . . . . . | 67 |
| 7 | Measures of Central Tendency for Percentage Standard Weight . . . . . | 68 |
| 8 | Measures of Central Tendency for Percentage Body Fat . . . . . | 69 |
| 9 | Means and Standard Deviations for Percentage Body Fat for Women of Normal Weight (Young, 1963). . . . . | 69 |
| 10 | Measures of Central Tendency for Young's (1963) and Avery's (1978) Samples. . . . . | 70 |
| 11 | Measures of Central Tendency for Preference of Saturated Colour . . . . . | 71 |
| 12 | Measures of Central Tendency for Preference of Tint . . . . . | 72 |
| 13 | Measures of Central Tendency for Preference of Shade . . . . . | 73 |
| 14 | Measures of Central Tendency for Preference of Strong Figure Ground Contrasts . | 74 |
| 15 | Measures of Central Tendency for Preference of Weak Figure Ground Contrast . . . | 74 |

| Table | | Page |
|---|---|---|
| 16 | Measures of Central Tendency for Preference of Large Design . . . . . | 75 |
| 17 | Measures of Central Tendency for Preference of Small Design . . . . . | 76 |
| 18 | Measures of Central Tendency for Preference of Warm Colours . . . . . | 77 |
| 19 | Measures of Central Tendency for Preference of Cool Colours . . . . . | 77 |
| 20 | Measures of Central Tendency for Preference of Rough Texture . . . . . | 78 |
| 21 | Measures of Central Tendency for Preference of Smooth Texture . . . . . | 79 |
| 22 | Measures of Central Tendency for Preference of Loose Style . . . . . | 79 |
| 23 | Measures of Central Tendency for Preference of Revealing Style . . . . . | 80 |
| 24 | Measures of Central Tendency for Anxiety . . . | 81 |
| 25 | Measures of Central Tendency for Internal-External Dimensions . . . . . | 82 |
| 26 | Measures of Central Tendency for Barrier . . . | 83 |
| 27 | Measures of Central Tendency for Penetration . | 84 |
| 28 | Measures of Central Tendency for the Ratio of Height of Figure to Width at Waist . . . | 85 |
| 29 | Measures of Central Tendency for the Ratio of the Area of Torso to the Length of the Torso . . . . . | 85 |
| 30 | Measures of Central Tendency for the Ratio of Head Area to Torso Area . . . . . | 86 |
| 31 | Measures of Central Tendency for the Ratio of Figure Length to Head Length . . . . . | 87 |
| 32 | Measures of Central Tendency for Head Area in 1/8" Squares . . . . . | 87 |

| Table | | Page |
|---|---|---|
| 33 | Percentages in each Category for the Dream Costume | 89 |
| 34 | Results of Chi Square Test of Independence between Grouping and Position of the Drawing on the Page | 90 |
| 35 | Results of Chi Square Test of Independence between Grouping and Size of Figure Drawn | 91 |
| 36 | Results of Chi Square Test of Independence between Grouping and Shape of Shoulders Drawn | 92 |
| 37 | Results of Analysis of Covariance with Age as Covariate | 95 |
| 38 | Summary of Significant Relationships from the Intercorrelation Analysis for all Five Groups | 100 |
| 39 | Intercorrelation Matrix and Significant Probability Levels for Physical Variables, Clothing Preferences and Psychological Variables for N=80 | 103 |
| 40 | Intercorrelation Matrix and Significant Probability Levels for Physical Variables, Clothing Preferences and Psychological Variables for N/N | 104 |
| 41 | Intercorrelation Matrix and Significant Probability Levels for Physical Variables, Clothing Preferences and Psychological Variables for F/N | 105 |
| 42 | Intercorrelation Matrix and Significant Probability Levels for Physical Variables, Clothing Preferences and Psychological Variables for N/F | 106 |
| 43 | Intercorrelation Matrix and Significant Probability Levels for Physical Variables, Clothing Preferences and Psychological Variables for F/F | 107 |

# LIST OF CHARTS


| Chart | | Page |
|---|---|---|
| 1 | Range and Directional Ratings for all Variables . . . . . | 65 |

## LIST OF DIAGRAMS


| Diagram | | Page |
|---|---|---|
| 1 | Baer's Frequency Polygon for Barrier and Penetration Scores . . . . . | 47 |

# CHAPTER I

## INTRODUCTION AND STATEMENT OF THE PROBLEM

Obesity is becoming more prevalent in our society. Using the ponderal index values, Nutrition Canada (1973) found that "half or more of the adult population is overweight" (p. 76). The obese person is often subject to scorn, ridicule and job discrimination. In addition, there is the possibility of ostracism. These factors may contribute to rising anxiety levels and emotional disorders. While some studies have related psychological and physical variables to obesity, very few have studied the implications of clothing to obesity. According to Stunkard and Mendelson (1973), two behavioral disturbances related to obesity are overeating and body image distortion. An underlying assumption which seems to permeate current literature is the belief that obese individuals respond to external cues. In theory, those who respond to such cues have less self control of eating habits, and therefore may be prone to overweight or obesity. If body image distortion accompanies obesity, and if clothing is related to body image, then, conceivably, clothing and its manipulation could be used to improve self image, reinforce body boundaries, and/or lower anxiety levels. As such, clothing could be a valuable tool or motivational factor in a broader program of weight reduction and weight loss retention.

The specific problem delineated for this research was the study of physical, psychological, and clothing variables among obese and non-obese women. For the purpose of this study the categories of women 30 to 65 years of age will be: normal weight throughout life, normal weight who were once obese, obese who have always been obese, and obese who were once normal weight. Women, whose weight histories and ages met the criteria established, were selected to make up the sample.

# CHAPTER II

## REVIEW OF LITERATURE

### Theories of Obesity and Problems of the Obese

Slenderness is highly valued in Western culture. The desirability for thinness can be traced to Sparta where boys and girls were required to exercise vigorously to maintain their weight, and to Rome, where women starved themselves to a fashionable size (Bruch 1973). Since slenderness is valued in our culture, being obese is considered undesirable. Fisher (1973) stated that women do not want to be big, and attempt to conform to the diminutive stereotype. According to Fisher (1973) the obese can suffer physical and social handicaps and in some cases deep-rooted psychological handicaps. He states, "they learn that they are perceived as ugly, misshapen and unworthy"(p. 117). Despite the fact that slenderness is highly valued, obesity is prevalent in Western cultures. Many theories, physiological, sociological and psychological, have been put forward to explain the causes of obesity. Theories related to physiological and sociological explanations for obesity will be dealt with first, with the more exploratory psychological factors to follow. Whatever the reason for obesity, individuals concerned have great difficulty in losing weight, and even greater difficulty in maintaining a desirable weight. Once off a weight reduction program most people return to being obese and some even exceed their former weight level.

Physiological Factors

Mayer (1968) categorized the physiological causes of obesity as follows:

1. Inherited genetic potentialities: Bruch (1973) supports the idea of inherited potentialities for obesity. She believes obesity may have been controlled in succeeding generation; however, inactivity on the part of individuals may have caused the inherited traits to become overt.

2. Hypothalamic origins: there are rare cases of hypothalamic disorders, or disorders which affect the area that controls satiety.

3. Disorders of the central nervous system: (Mayer 1968).

4. Disorders of the endocrine glands: this includes disorders of the Islets of Langerhans, the pituitary gland and disorders of the reproductive system as a result of castration, menopause or ovarian changes.

5. Inactivity or immobilization: to support this, Mayer cited a study which indicated that obese babies do not eat more than normal babies but normal babies are three times as active as overweight babies (Mayer and Harris, 1973).

6. Body type: Mayer, using Sheldon's body build classification (Sheldon, 1963), suggests that endomorphs have a predisposition to fatness.

7. Psychic disturbances and social pressures: these are cited by Mayer (1968) as other possible reasons for obesity.

Burnight and Marden (1973) found that obesity increases

with age. They found that almost twice as many women as men were overweight. Thomas and Mayer (1973) are convinced that inactivity is the most important factor in 'creeping obesity' in modern society. Mayer (1968) states that when physical activity drops abruptly the food intake should be decreased to avoid obesity. For women, when housework takes a marked drop in later life, there should be a reduction in caloric intake and an increase in regular exercise to use extra calories.

Mayer (1968) stated that another factor to be considered is that there is a progressive degeneration in body composition where protein is replaced by fat. Regression equations have been formulated, on the basis of skinfold measurements, for the prediction of specific gravity (density) and hence the percentage of body weight which is fat. Mean density has been found not to change until the fifth decade, 40 to 50 years of age. After the fortieth year there is a change in body 'fatness' with each decade. The mean density decreases by decade and thus body fatness increases. Young (1963) suggests that as age increases fat is deposited more centrally and less subcutaneously. To control this centralization of fat the individual must retain a high level of exercise throughout the lifetime.

Sociological Factors

Goldblatt, Moore and Stunkard (1973) studied social

factors in relation to weight and found that there is a larger percentage of overweight individuals in lower socio-economic groups. They attributed this to the fact that there tends to be a high carbohydrate and fat content in the diets of this group. This finding is supported by Burnight and Marden (1973). Goldblatt et al (1973) found that certain ethnic groups had a higher incidence of obesity which they attributed to family eating habits. They did point out, however, that obesity in these groups may not be considered abnormal.

According to Goldblatt et al. (1973) the most important finding of their study was the remarkable consistency with which social factors correlated with body weight. They concluded that obesity can no longer be viewed as simply an abnormal characteristic of the individual. It must also be viewed as one of the possible and not too infrequent normal responses of persons in certain subgroups of society to the perceived expectations of their social milieu. Although not being obese, indeed, being thin, seemed culturally desirable for the women in the study by Goldblatt et al., almost one out of three lower class females was obese. Such a high percentage, they conclude, implies that for the subgroup in that particular study, overweight was common enough that it was not viewed as abnormal. Upward social mobility was also found to be a factor. Among those who moved upward socially, there was a lower prevalence of obesity. In addition, they

found that the longer a woman's family had been in the U.S.A. the less likely she was to be obese. That is, obesity decreased with each successive generation.

## Psychological Factors

There are many psychological concepts which may be used to explain the complex issue of obesity, its causes and consequences. Fisher's theories relating to the causes of obesity involve explanations such as lack of self-control, unconscious and unsatisfied oral wishes, immature and regressive aims and the desire to avoid adult responsibilities, including mature sexuality (Fisher, 1973). Additional concepts that seem to have potential for the study of obesity include Body image, Anxiety, and Locus of Control.

### Body Image

Body image can be considered as the picture of our body which we form in our mind, that is to say, the way in which our body appears to ourselves.

According to a definition by Gorman (1968):

> The body image is the concept of the perceptual pool with the experiential pool. The perceptual pool consists of all our present and past sensory experiences, and the experiential pool consists of all our experiences, affects and memories. The body image is thus a plastic, dynamic entity which is continually being modified by new percepts and new experiences. (p. 8)

Cappon (1973) terms it physical self image. It can be a direct means of perceiving change - we see ourselves in a

mirror or study a photograph. We perceive it also through a sense of well being or a sense of lethargy, through a feeling of heaviness or a feeling of lightness. According to Bruch (1973) the expression 'body image' is a vague concept that has not been sufficiently developed, either theoretically or empirically, so that it can be measured with any degree of assurance. It is, however, a concept of definite clinical usefulness for summarizing the multitude of attitudes patients may experience and express about their bodies (p. 87).

Bercheid and Walster (1973) point out that we form opinions of our abilities, emotional states and attractiveness largely from the feedback we get from others. These reactions are often indirect but are rarely misunderstood. Cooley (1964) illustrated the reflected character of the self by comparing it to a looking glass. We see our face, figure and dress in the reactions of others and we are interested because they are ours. We are pleased or not, and so we imagine what others think of our appearance, manners, aims and character and are affected by it.

Two behavioral disturbances seem to relate specifically to obese individuals. They are overeating and the disturbance of body image (Stunkard and Mendelson, 1973). The body image distortion may range from gross depersonalization ... through distorted thoughts and feelings about the body to a distorted perception of the body. The disturbances are

primarily in the area of feelings about the body. Stunkard et al. (1973) consider that body image disturbances do not appear in all obese persons, only in the minority of neurotic obese individuals. In their study on the obese, Stunkard and Mendelson found, in some cases, that if an obese person viewed himself in the mirror it disturbed him to such an extent that it could interfere with such activities as shopping which may involve viewing oneself in show cases and windows.

Some obese individuals are so self conscious that they have misconceptions about how others view them. While obesity is not always a reason for self consciousness, others may make the obese individual self conscious.

Mead (1934) notes that the individual is not innately self conscious. Other people, however, react to him and these reactions experienced by the person cause him to think of himself as an object and to develop attitudes and feelings about himself. An individual responds to himself as others respond to him. Both Mead (1934) and Cooley (1964) state that the self is a socially formed self. The self is a product of communication and interchange with society. Mead states that there are many selves which represent the attitudes expressed by the family, teachers, friends, and other members of society. If the reflected image or feedback has been unfavourable, the individual may develop an unfavourable or distorted image of himself.

The age of onset of obesity seems to affect the degree of body distortion which occurs. Stunkard (1976), in a study of 25 men, of whom 12 were "childhood-onset obese" and 13 "adult-onset obese", found that the distinction between the two groups was striking. "Not only were the 'childhood-onset obese' less successful in losing weight, also tended to be more obese and more emotionally disturbed .... The childhood-onset obese seemed more emotionally labile, more complaining, more discouraged, more demanding. The adult-onset obese seemed more stable, more laconic, more matter of fact.... Some childhood-onset obese did not complain about their bodies. But when a body image disturbance was found, it was always in the childhood-onset obese person" (p. 154).

Another important aspect to consider is the negative evaluation by significant others. Berscheid and Walster (1973) feel that the criticism of parents and peers has a great bearing on body image disturbances where overweight is not the accepted norm. They state that overweight is one of the main reasons for ridicule during the childhood and adolescent years. This bitter experience of ridicule may color the whole individual's later evaluation of obesity.

While factors influencing body image disturbances fluctuate widely over short periods of time (Stunkard, 1976), the body image persists with remarkably little change. Neither the extent of weight reduction, nor its duration

seems able to correct the disturbance of body image. Bruch (1973) in a discussion of disturbances of size awareness explains that individuals having been obese for a long time will not "see" themselves as thinner even after a weight reduction of considerable proportions. According to Bruch "they carry the image of their former size like a phantom with them." This situation is confirmed by Glucksman and Hirsh (1973) who state that the most striking observation was that obese subjects increasingly overestimated their size during and following weight loss, while prior to weight loss they had underestimated their size. In spite of their weight loss they perceived themselves as if they had lost no weight, and continued to feel obese. Glucksman and Hirsh add that "one reason for the 'phantom body size' phenomenon may be that, in subjects obese since childhood, the 'body image' before weight loss is relatively fixed, and cannot be altered as rapidly as the actual change in body configuration. Moreover there may be psychodynamic determinants for the maintenance of a before-weight-loss 'body size image'" (p. 52).

Fisher and Cleveland (1965) have hypothesized that the normal individual's attitude toward his body may mirror important aspects of his identity. An unusually intense level of ego involvement is evoked by one's body as an object of perception, since it is at once that which is perceived and is also a part of the perceiver.

Indications are that an individual starts to organize his body perceptions early in life. There are some areas which are at the forefront of awareness and other areas which are denied (Fisher and Cleveland, 1968). Gorman (1969) states "that since the body image is a personal possession which has both its intimate parts and its public parts as well, it must be delineated by methods which sample both public and private portions.... Although the validity of the Draw a Person Test has been challenged, the use of these human figure drawings ... is of definite clinical value in estimating the outlines of body image" (p. 119).

The drawing of a person by a subject represents that individual's perception of his own body in space. It also represents the expression of the self or body in the environment. What is expressed may be regarded as the body image or a complex reflection of self regard or self image (Hammer, 1958). Fisher (1973) adds "What I would particularly like to call to your attention is the fact that such a drawing does mirror body feelings and attitudes. There is formal research evidence that when a person sketches a human form he puts something of his own body feelings and sensations into it" (p. 128).

The "body image" concept is the nucleus of the psychodynamic factors which determines the figure drawn. Each human being has a psychic make-up, an image, physical in structure and largely unconscious, of the kind of person he

is. This image is based in part on convention and in part on symbolic translation from attitude into bodily characteristics. Although figure drawing is determined by a combination of factors: cultural, personal training, biochemical, transitory, and characterological in nature, the latter may be isolated, identified, and to some extent quantified (Hammer, 1967).

Kotkov and Goodman (1953) found in their study of drawings by obese women, compared to drawings by individuals of normal weight, that the obese expresses her variation from the normal weight woman through her perception of the female image. Although the women were asked to draw both male and female figures, the differences projected were almost always in the drawings of the same sex.

Kotkov and Goodman (1953) found that the drawings of the obese were almost always larger or wider than that of the control group. The differences they found were a function of actual differences in an index of body weight. Kotkov and Goodman (1953) list seven items which serve to identify obesity in subjects and suggest that only four of the seven signs are needed to differentiate between obese and normal subjects. These signs are as follows:

1. The ratio of height of the figure to the width at midline for the obese individual is smaller than for the ideal female drawings.
2. The horizontal area covered by the obese female is

greater than the ideal female drawing.

3. The head area of the obese female is larger than that of the ideal female drawing.
4. The head area of the obese male is smaller than that of the obese female to a larger degree than is the ideal male to the ideal female drawing.
5. The ratio of the figure length to the head length of the obese female is smaller than that of the ideal female drawing.
6. The obese female drawing is more often in the upper, left hand third of the page than is the ideal female drawing.
7. The obese female drawing has square shoulders more often than the ideal female.

Berman and Laffel (1953), using the Draw A Person technique, found that there was a correlation between the body type of the subject and the figure drawn. These findings tend to support the theory that individuals tend to draw figures with which they are familiar, that is, their own.

Aside from body image the size of the figure drawn may indicate the subject's self concept. Tiny drawings are presented by those with feelings of inadequacy and perhaps withdrawal tendencies (Hammer, 1967). Drawings which tend to reach the borders of the page reflect feelings of environmental constriction with compensatory action or fantasy.

Placement of the figure on the page corresponds roughly

to where the person places himself in the environment. The right side of the page is considered to be environmentally orientated, while the left side is self orientated.

Drawings give the location of conflict. How we say something graphically, which is the expressive aspect, depends on where, in what part of the figure it is being said, and upon what is being said in terms of the content of the figure.

Fisher and Cleveland (1951) established that there are distinct individual differences in the definiteness or articulation one ascribes to the boundary regions of one's body. According to Fisher (1973), although an individual realizes that the skin indicates the edge of the body, the individual is usually unaware that basic attitudes about that edge, and whether or not the boundary (or Barrier) is substantial and defensible, are not inherent but have been learned. Individuals learn to have a certain amount of trust in the protective power of the flesh that surrounds the body. There are, however, some individuals who have difficulty perceiving their bodies as a separate entity or having a border. They, therefore, feel open and vulnerable. Fisher (1973) stated that the "greater a person's uncertainty about the protection provided by his own body border, the more he will seek compensatory ways of reaffirming that border" (p. 22). To this end, people expend enormous amounts of energy setting up defensible boundaries such as forts,

building and shelters. They also cover their bodies with protective and concealing clothing and throw up screens between themselves and others by using perfumes and other scents. Fisher believes that self touching, rubbing with oils, massaging muscles, applying hot or cold showers to the body surfaces, and sunbathing (with the resulting tan) are all methods of providing awareness of the body boundaries (Fisher, 1973).

The amount of distance we place between ourselves and others may well announce how we feel about the security of our borders. Those individuals who keep their distance may feel less secure about their body boundaries. If insecure, one may feel anxiety about intrusion of some sort, or even fear physical attack. Fisher (1973) suggested that the body boundary provides security not only because it seems to guard against outside attack but also because it holds in things: things that should not get out, such as bad fantasies, weak emotions and wishes that might escape into public view.

Fisher (1973) stated that, in general, women feel more secure about their body boundaries than men and are more likely to feel comfortable in relating to their body sensations. From an early age girls are more aware of their bodies, are more free to experiment with body appearance and clothing, and are encouraged to devote a great deal of attention to their bodies. As a result, women seem to be

able ro relate to their bodies more flexibly than do men. Women can shift clothing style more easily than men and are constantly experimenting with ways of altering their appearance. Certain aspects involve camouflage: that is, using clothes and cosmetics to hide or highlight body parts. Women tend to construct façades. According to Fisher (1973):

> One obvious explanation of the woman's greater need to camouflage herself is that she is more clearly equated with her body than the man is with his body. The body appearance of a woman advertises roughly her status in the world of love, sex and appeal to men. This is still the prime definer of womanly worth. There is probably little correlation between man's physical attributes and his role status. His worth is actually defined by his power or money or intellectual prowess. Even his self-definition is more related to his social status than to his appearance.... A woman's self-definition is, by contrast, very likely to be heavily influenced by what she sees in the mirror. (p. 55)

Emotional arousal, according to Fisher (1973), may make bodies seem more real.

> We know little about the self validating impact of being emotionally aroused, but I would conjecture that eating, with its associated body sensations, may have important self-defining significance for many. Sexual arousal, elation, and even certain brands of anxiety may function similarly for others. The individual who has to keep moving, who has to maintain himself in a super-busy, charged-up state may, in the final analysis, be primarily dedicated to asserting that his body is an activated and therefore palpably separate object. (p. 25)

Concerning the strengthening of body boundaries,

Shilder (1964) stated that "whatever comes in connection with the surface of our body is more or less incorporated into the body" (p. 202). According to Fisher (1973) some people, in order to feel right, put on shoes, girdles, wrist watches, and other pieces of wearing apparel. When clothes are put on they tend to define the boundary of the body and could result in a sense of being smaller. Tight girdles and belts give rise to a sense of being compact, squeezed in and smaller. Individuals also reinforce body boundaries by providing a particular kind of house to live in. While people tend to have certain characteristic ways of experiencing their body boundaries, abrupt changes in their life situations may occasionally cause sharp fluctuations in their experiences with body boundaries. For some, fat may provide a protective layer without which an individual may feel vulnerable. Clothing may be used to define, protect, hide, camouflage or accentuate the body according to the psychological needs of the individual in terms of body boundaries.

Penetration

Fisher and Cleveland (1968) introduced the concept of Penetration at the same time as the concept of body Boundary or Barrier. The Penetration score is indicative of the degree to which persons experience their body boundaries as being penetrable, while the Barrier score is believed to

reflect the degree to which body boundaries are experienced as firm and definite. They state that although relatively little is known about Penetration, it is not considered to be the direct opposite of Barrier. Fisher and Cleveland state that:

> We have observed in a group of psychologists and anthropologists that although such individuals receive very high Barrier scores, they also tend to receive unusually high Penetration of Boundary scores. Since this is a group in which one would expect to find outstanding ability to empathize and identify with others, we are inclined to think of the elevated Barrier and Penetration scores as indicating that such empathic ability is a function of possessing a boundary simultaneously definite and yet paradoxically easily pentrable. The implication would be that identifying with and understanding others ... requires the security conditions that are correlated with definite body boundaries and also requires the potential for boundary fluidity that seems to accompany high Penetration of Boundary score. Presumably, a highly definite boundary without the potential for fluidity would interfere with role taking. (p. 357)

Studies on women subjects, by Kernaleguen (1973) and Dowdeswell (1972), showed a significant correlation between the two concepts, Barrier and Penetration, while a study on men by Davis (1977) showed no such correlation. Fisher (1964) found that women have more definite boundaries than men. A possible reason for men possessing lower boundaries is that a man's role and status in society is based on his attainments rather than his bodily attributes. It is probable that a woman more nearly equates her body with the self than does a man.

Anxiety

Anxiety is defined by the dictionary of Social Sciences (Gould and Kobl, 1964) as:

> A reaction of apprehension ranging from uneasiness to complete panic preceded by a real or symbolic condition of threat which the person perceives diffusely and to which he reacts with an intensity which tends to be disproportionate. (p. 30)

Horney (1937) believes that feminine psychology is based on lack of confidence and an overemphasis of the love relationship. Horney's primary concept is of basic anxiety. In general, anything that disturbs the security of the child in relationship to his parents produces basic anxiety. The anxious child may be hostile, submissive, develop an unrealistic picture of himself to compensate, use bribery or wallow in self pity to cope with feelings of isolation and helplessness. Any one of these strategies may become a more or less permanent fixture of the personality. Conflict arises out of social conditions. Anxiety, according to Horney, is the neurosis of our time. Fisher (1973) states that a sense of body strangeness often occurs when one feels anxious. Depersonalization (a sense of not being unified with one's body, or regarding it with detachment) in a normal person may be a reaction to stress. "The physiological changes associated with anxiety produce vivid body sensations that are so different from one's usual body state that they may be disturbingly intense and lead to defensive reaction such as "this isn't me" or "my body doesn't feel

like that" (p. 13).

Body depersonalization is encouraged by many of our current customs and fads. Women who are repeatedly confronted by clothing style changes to which they are supposed to adapt even though the styles are not compatible to their own feelings about their bodies, may come to feel that the body is not much different from a department store mannequin. This applies not only to outer clothing but underwear, hair styles and cosmetic fashions. There are women who have a sense of anxiety and incompleteness until they have put on a brassiere and other clothes and cosmetics (Fisher 1973).

What of the obese who find it difficult to comply with the current trends of fashion? The obese may resort to self denial and distortion of appearance. The individual may have difficulty in making rational sense of the body. This irrationality stems not only from distorted symbolic meanings assigned to the body and the anxious need to avoid directly contemplating its vulnerability but also from its continually changing quality.

The distance we place between ourselves and others may indicate anxiety about being intruded upon in various ways. It may take on such concerns as being ridiculed, or even the dread of being physically attacked. Anxiety, like emotional arousal, may have a self-defining significance for many people.

Anxieties about a 'bad' body may be activated when an

individual must appear publicly before an audience. Those preparing for public appearance may be hypersensitive to possible deviations in their appearance. Anxiety may show itself in body terms, such as muscle awkwardness, blushing, and voice difficulties. The shy and the embarrassed individual may feel his body is on trial and likely to be rejected.

If a body part fails to live up to a person's image of how large it should be, this can become a focus of chronic anxiety. In our culture, size standards have to do with obesity, and being fat probably mobilizes as much defensive energy from the population as any other single activity (Fisher, 1973).

Holt and Winick (1973) state that anxiety is caused more by the nature of the self image than by external reality or even interpersonal relations (p. 335). In a study of death anxiety, general anxiety and locus of control, Patton and Freitag (1977) found that the general level of anxiety correlated positively with locus of control. That is, the more external the individual the more likely he is to be anxious.

## Locus of Control (Internal-External Control or I-E)

The locus of control construct originated within the framework of Rotter's social learning theory which states that for human beings who have begun to learn concepts, the

important factors in learning are not only the strength and frequency of rewards and punishments but also the individual's belief that his behavior produced reward or punishment (Rotter, 1971).

Locus of control "refers to a generalized expectancy concerning the contingency between one's behavior and subsequent reinforcements" (James, 1973). Individuals who score high on the locus of control scale (externals) tend to perceive that most events are due to factors beyond their personal control, that is, fate, luck, or manipulations of unpredictable others. The internals (those who have low scores on the I-E dimension) tend to believe that they can acquire a considerable degree of control over events in their personal lives.

It is clear from I-E studies that people differ in the tendency to attribute satisfaction and failure to themselves rather than to external causes and that this difference is relatively stable. Most investigators divide their subjects into two groups: internal or external depending into which half of the distribution the subject's score falls. The two groups do not represent two personality types, but a continuum; individuals have varying degrees of externality or internality.

Rotter concluded from various I-E studies (Rotter, 1971) that:

1. Children from richer, better educated families tend

to have more belief in their own potential to determine what happens to them.

2. Intelligence does not seem to be related to I-E Scores.
3. Internal subjects are more successful than external subjects in persuading others to change their minds.
4. People who believe they can control their environment also believe that they can control themselves.
5. Highly external individuals feel they are at the mercy of the environment, and that they are being manipulated by outside forces. When they are manipulated, externals seem to take it in their stride but internals are not so docile and tend to resist manipulation.

Segal and DuCette (1973) state that internally orientated individuals actively seek information about the environment. The internally orientated individuals will, therefore, modify their behavior to fit the demands of a situation, while the externals will be less adaptive since they have not actively sought the information required. Sherman, Pelletier and Ryckman (1973) conclude that there is some support for the view that externals evaluate information independently of a variety of external sources of influence.

Schacter and Gross (1968) ran a series of experiments which showed evidence that fatness in humans is determined by environmental stimuli, or by external cues, not by internal physical states. Stunkard and Koch (1964) also conducted research in this area by having the subjects

swallow balloons connected to a pressure measuring service. He recorded the extent to which stomach contractions coincided with self reports of hunger. The normal subjects reported hunger which coincided with stomach contractions, but with the obese there was little correspondence between stomach contractions and self reports of hunger. Therefore, they concluded that the obese reacted to external cues, rather than the physical state of hunger.

Mayer (1973) disagrees, saying that the cause of obesity is not to be found in the environment, but in the internal physiology of fat individuals. Many obese individuals claim that they eat when anxious or frustrated. Joe (1971) suggested that externals describe themselves as anxious, less able to cope with frustration and are more concerned with fear of failure of achievement. Conversely, internals describe themselves as less anxious, more constructive in overcoming frustration, and more concerned with achievement. If externally controlled individuals are unable to cope with frustration and anxiety, this may well be one of the reasons for overeating resulting in obesity.

Pawlicki (1976) hypothesized "that being trained in self directed behavior-modification techniques would increase one's generalized feeling of control over the environment.... It was assumed that learning to gain control over one aspect of behavior and learning techniques of self directed behavior modification would be likely to influence a general attitude

of control over the environment" (p. 320). The results of this experiment provided some qualified support for the hypothesis. Students having taken Rotter's I-E scale both at the beginning and end of a behavior-modification course did show an increase in their internality score, that is, they indicated a feeling of more control over their environment. Murray (1976) conducted an experiment involving 12 overweight women. Half the women received 10 weeks of self control training, the other six an equal period aimed at increasing their determination to lose weight. Both groups showed a significant loss of weight. A follow up six months later showed that both groups had regained much of their lost weight. There was no evidence that self control training was superior to a treatment which did not involve behavior therapy.

Gormanous and Lowe (1975) tested normal and obese men and women on Locus of Control. They concluded that obese persons could not be distinguished from normal persons in the I-E dimension and that "externality does not appear to predispose a person to become obese nor is externality a result of a person being overweight" (p. 30).

Clothing Preferences

Fisher (1973) states that "each of us has an elaborate ritual of grooming and putting on of clothes that is intended to slant the impression we make. You can't reconstruct

your body but you can by means of clothes, exercise a choice of façade you attach to it" (p. 85). He adds that as we clothe ourselves we are, in a sense, doing a self portrait. The layers of camouflage we apply are intended to fill out an image that we have in mind. Shilder (1964) said that "whatever comes in connection with the surface of our body is more or less incorporated into the body" (p. 202). Clothing which is chosen and worn may be considered as part of an individual's body image. Fisher (1973) suggests that although there are many factors influencing clothing choices (comfort, economic considerations, fashion standards, social approval, aesthetic impression, etc.) the overall purpose of an individual's choice is to tell herself and others that she is a certain kind of person.

A survey by Berscheid, Walster and Bohrnstedt (1973) revealed that about half the women surveyed were unhappy with their weight, and because weight tends to settle in the abdomen, buttocks, hips and thighs, they were unhappy with these body parts. They add that a woman's self esteem relates to being pretty and slim, and the more time one has served in a physically unattractive body the less happy and confident one is. Fisher (1973) confirms this, stating that if a body part fails to live up to a person's image of how large it should be, this can become a focus of chronic anxiety. It must look the right size, and even moderate degrees of obesity are perceived as disfiguring. Secord

and Jourard (1953) suggest that women are more likely than men to develop anxiety concerning their bodies because of the social importance of the female body.

Mayer and Harris (1973) state that the obese are obsessed with self image. Fisher's (1973) studies show that obese individuals feel vulnerable and that this vulnerability is increased with loss of weight. In addition, he indicates that one's feeling of vulnerability increases with the loss of clothes. He adds that in the taking off or putting on of clothes and shoes it is not uncommon to feel one's body become larger or smaller. When clothes are put on they tend to articulate the boundary of the body. The use of girdles and tight belts may give rise to a sense of being compact, squeezed in and smaller. It is also true that putting on clothes can make one feel larger, as bulky clothes can balloon the apparent size of the body. Fisher suggests that the expanding versus the reducing effects of clothes probably interact, and each individual learns from experience what kinds of clothes will give the body size that the individual most prefers. Fisher says, also, "that clothes serve us all when we need to disguise ourselves.... We all use clothes to conceal things. We obviously hide our nakedness, we keep our defects out of sight" (p. 104).

Fisher (1973) said that "when Cinderella went to the ball disguised as an elegant, high status figure, she was really not behaving terribly different than most people as

they don their costumes each morning in preparation for their round of daily contacts" (p. 85). He adds that when we change clothing, "it is the appearance of our own body that we alter, and in that sense we are much more ego involved with the alteration than one we perceive in another person. Furthermore, costume shifts may actually involve tactual and kinesthetic shifts that are not apparent to the outside observer" (p. 89). One set of clothes may feel smoother or rougher than another, or another, tighter or looser, and therefore affect how free or inhibited we feel. Yet another type of clothing may affect our mood or level of anxiety. He suggests that a bright, cheerful outfit might serve as a reminder that life need not be sad or bad, while a train of a long dress or a heavy dangling necklace might help to enhance the size of those women who feel they need such enhancement.

Kernaleguen (1973) supported Fisher's (1970) theory that women have more definite body boundaries than men. Kernaleguen found that women experienced body boundaries as more definite and more easily penetrable than men. In addition, women were found to be more-reward seeking through clothing than men. There was, however, for both men and women, a significant relationship between Barrier and reward-orientation to clothing, suggesting "that as body boundaries are experienced as firm and definite, there is a corresponding increase in seeking rewards through clothing" (p. 847).

Fleming (1968), in a study of young women with physical disabilities, found that high Barrier subjects indicated a preference for shade. Megargee (1965) hypothesized that high Barrier scores are associated with adaptive behavior, Fleming interprets this association as meaning that a well adjusted girl will chose a fabric color which will de-emphasize her disability. Compton's (1964) study of psychotic women showed that individuals with weak body boundaries preferred saturated colors and strong figure contrasts. Low Barrier on the other hand, was found to be related to peer ratings of fashion leadership. Kernaleguen (1968) showed that in a select group of college women those who adopted the latest fashions were those who experienced their bodies as particularly vulnerable and open to invasion. These results indicate that the fashion leaders may use clothing to reinforce body boundaries. Brett (1973) discovered that among college women, external control was positively related to debilitating anxiety, and that debilitating anxiety was positively related to fashion leadership. Therefore, it may be assumed that debilitating anxiety is related to weak body boundaries. Compton (1967) found that more anxiety was exhibited in women with low body awareness than in women with high body awareness. Anxiety was negatively correlated with choices of strong figure ground contrasts. That is, anxious individuals chose weak figure ground contrasts in clothing fashions.

Contrary to Compton's findings, a study by Caddel (1966) indicated that neurotic and anxious personalities chose intensified colors and those with moderate maladjustments chose red and orange as favorite colors. Also repressive hysteroid individuals had cool color preferences.

In a study of Maryland homemakers, Compton (1963) found evidence of a positive relationship between large weight/height ratios and a preference for small design. In a further study, Compton (1966) studied delinquent and non-delinquent girls and found that the former chose tints, large designs, fewer shades of contrast and more weak contrasts than did the latter. Further findings suggest that delinquents with large weight/height ratios chose warm colors and weak contrasts in the value of color between the design and background of the fabric. The girls with large hips chose small designs, while those with large bust measurements chose small designs and warm colors.

Sears (1966), using The California Psychological Inventory, found that for delinquent girls significant positive correlations were discerned between large designs and cool colors and a sense of well being; and for saturated colors and good impression. For the non-delinquent girls significant positive correlations were found: between strong figure ground contrast and dominance; weak figure ground contrast and femininity; warm colors and rough textures with responsibility; and warm colors and socialization.

Also Compton (1962) found that women who prefer small designs in their dress fabrics were particularly feminine and interested in making a good impression on others. She also found that those who preferred deep shades and saturated colors were more sociable and less submissive than those who rejected shades and saturated colors.

In yet another study of delinquents and non-delinquents Humphris (1968) found that delinquent girls who preferred masculine, modest styles also chose tints in rough textured fabric. The girls who preferred warm colors chose smaller designs in fabric more often than the girls who preferred cool colors. The non-delinquent girls, who chose fewer modest styles, also preferred saturated colors, while the girls who chose tints favored rough textured fabrics. In addition, strong color value contrast was related to a preference for modest clothing.

Fisher (1973) comments that "there is a decreasing preference for bright unsaturated color with increasing age" (p. 97). Since no empirical research relating age to color and fabric preferences has been found, this relationship has not been established.

The above research suggests that there may be a relationship between a feeling of vulnerability, anxiety, delinquency, weight/height ratios, the size of body parts, age, basic inner personality characteristics; and the choice one makes with respect to the color, texture and design of

fabric. The interaction among psychological variables and physical and personality characteristics may result in preferences for certain types of fabric, style preferences and color choices.

In summary, some research studies have indicated that the specific psychological and physical variables reviewed bear some relationship to obesity. The number of studies relating clothing to these psychological variables is very limited. No investigations of clothing related to obesity were found.

# CHAPTER III

## METHODS AND PROCEDURES

### Theoretical Framework

The theoretical framework for this study was based on Fisher and Cleveland's theory that the body as a perceptual object is unique in that it is both part of the perceiver, and part of that being perceived by others. If the individual being perceived is obese there will be a negative reaction by others, in accordance with our cultural ideal of feminine body weight. If the individual has been obese since childhood or adolescence, the consequent persistent negative reaction from others may have more lasting and serious implications for her than it does for an individual for whom obesity occurred later in life. The fact that others react negatively may be a source of frustration and anxiety. This may result in a feeling of powerlessness to control one's own destiny: consequently, a tendency to become externally controlled, if externality is not already a part of one's psychological orientation. Obesity may become a focus of chronic anxiety, and may have other permanent psychological implications as well.

Body image extends to incorporate one's clothes, and as such, clothing helps to establish the physical boundaries of the self. The way an obese person experiences body image and the way the individual views control over destiny, may

be related to preferences in clothing and to the level of anxiety.

Definitions

For the purpose of this study the following terms were used:

1. n=80: The total group.
2. N/N: Women of normal weight who have always been normal weight.
3. F/N: Women who have been overweight or obese but who have reduced to normal weight or near normal weight and who have retained that weight for a minimum of two years.
4. N/F: Women who were normal weight for most of the first twenty years of life but who have gained weight and have become overweight or obese.
5. F/F: Women who have been overweight or obese since childhood or adolescence.
6. Normal Weight: Weight which does not deviate more than 10% above or below standard weight.
7. Overweight: Weight which is 10 - 20% above standard weight.
8. Obese: Weight which is 20% or more above standard weight.
9. Psychological Variables included: Locus of Control (I-E or Internal-External) Test, Anxiety,

the Holtzman Inkblot Technique for Barrier and Penetration, Body Image, the Draw A Person Technique and Dream Costume.

a. Locus of Control is a generalized expectancy regarding the nature of the casual relationship between one's own behavior and its consequences. The perception of events as controlled independently of an individual's own actions is termed belief in external control. The perception of events as contingent upon or resulting from an individual's own actions is belief in internal control. Operationally defined, Locus of Control is the score on the William H. James Internal-External Control Scale.

b. The Institute for Personality and Ability Testing Anxiety Test (I.P.A.T.).

Anxiety, according to Gould and Kobl (1964) is: A reaction of apprehension ranging from uneasiness to complete panic preceded by real or symbolic condition of threat which the person perceives diffusely and to which he reacts with an intensity which tends to be disproportionate (p. 30). Lack of self sentiment development or failure to integrate behavior about a clear self concept, ego weakness, suspiciousness, guilt,

proneness and frustration tension are expressions of anxiety (Cattell & Sheier, 1963). Operationally defined, it is the score on the I.P.A.T. Anxiety Scale Questionnaire.

c. The Body Boundary (Barrier) Index is the degree to which an individual perceives the body boundaries as firm and definite or weak and indistinct. Operationally defined, body boundary index is the number of times a Barrier response is given to the first 25 slides of Form A of the Holtzman Inkblot Technique.

d. Body Penetration is the degree to which a person experiences the body boundaries as being easily penetrable. Operationally defined, the penetration score is the number of times a penetration response is given to the first 25 slides of Form A of the Holtzman Inkblot Technique.

e. Body Image is a mental picture of one's own body, that is, the way in which one's own body appears to the self.

f. Draw A Person Test is the drawing of a human form by a subject. Operationally defined, it is the score obtained by measuring the deviation of the drawing from the ideal figure in the Draw-A-Person (D A P) Technique.

g. Dream Costume is a costume visualized by a subject as answering to all her overt and covert needs with no financial or other restrictions imposed.

10. Clothing Variables included: Compton's Fabric Preference Test and the Style Preference Test.

a. Fabric Preference is the choice of color, design and texture of the fabric by an individual who intends to wear that particular fabric as part of, or an extension of the body boundaries. Operationally defined, fabric preferences are the scores obtained from the 78 slides of the Compton Fabric Preference Test (C.F.P.T.).

b. Style Preference is one's preferred style of clothing measured along two dimensions, namely: loose-fitted and reveal-conceal. Operationally defined, style preferences are the scores obtained from the 18 slides of the Style Preference Test.

11. Physical Variables included: age, actual weight, predicted standard weight, percentage standard weight, and percentage body fat.

a. Age: was determined by calendar birthdate.

b. Actual Weight: was the weight of the subject as measured by a medical scale. Operationally

defined, it is the weight in pounds recorded from a reading on a medical scale.

c. Predicted Standard Weight was the ideal weight for a subject. Operationally defined, it is the ideal weight for the subject as determined by the Metropolitan Life Insurance Weight Chart (Metropolitan Life Insurance Company, 1959).

d. Percentage Standard Weight was the percentage weight above or below the predicted standard weight of the subject. Operationally defined, it is the percentage standard weight calculated using the formula:

$$\text{Percentage Standard Weight} = \frac{\text{actual weight}}{\text{predicted weight}} \times 100.$$

e. Specific Gravity (density) and Percentage body fat were calculated by the formula for young women or older women (Young, 1962). See Appendix G

Objectives

I. To establish if women of different weight histories and current weight differ significantly from each other on psychological, physical and clothing variables.

In order to achieve objective I, four groups of women were selected on the basis of weight histories and current weight. The general information questionnaire, Appendix B, provided the weight history of each individual. To determine into which group overweight or obese individuals were placed, it was necessary to know the age of onset of obesity.

If obesity set in during childhood or adolescence, they were placed in the F/F group. If obesity occurred after 20 years of age, they were placed in the N/F group. Women in the F/N group were required to have reached their ideal weight or the weight prescribed by the physicians and to have maintained that weight for a minimum of two years. The N/N or control group consisted of subjects who had maintained normal weight throughout life, with the exception of pregnancies or illnesses which may have effected a temporary change in weight.

II. To detect patterns of relationships between psychological, physical and clothing variables.

Assumptions

1. It was assumed that: The subjects understood all instructions and answered all questions as truthfully and accurately as possible.
2. All subjects volunteered for the research project.
3. a. Nominal data included weight history data for classification of groups and data obtained from dream costume description.
   b. Interval data included age, weight and scores of D A P test, Barrier, Penetration, I-E, Style Preference, C.F.P.T. and I.P.A.T.

Limitations

1. This was a non-random sampling of normal weight and obese women; therefore, generalizations cannot be made beyond this group.
2. No effort was made to match age, I.Q. or social status among the four groups.
3. To accommodate the subjects, testing was done in several groups, not of equal size, nor at the same time of day. This may, to some degree, have affected the results.
4. There may have been some uncontrolled variables such as differing reactions to the various tests and testing situation, weather, mood, which may have affected the data gathered.

5. It was impossible to check the weight histories, therefore the memory and honesty of each subject in the research program was relied upon.

Selection of the Sample

1. A non-random sample of 80 females, ranging in age from 30 to 65 years, from Edmonton and Calgary, was divided into four categories.
2. All of the subjects, with the exception of those in the normal weight group, were chosen from individuals who were active members of weight reduction groups. They were fully informed of the nature of the research and subsequently volunteered.

Procedure

1. Testing was done in groups, not necessarily homogeneous, or by category. Subjects were given general instructions. (Appendix A)
2. The complete set of tests was administered to the subjects at one time. All testing was done by the researcher with a trained assistant to help with skinfold measurements and with other tests when necessary.
3. Order of the Tests

| | Time |
|---|---|
| (a) General information questionnaire | 5 minutes |
| (b) Skinfold measurement | 10 minutes |
| (c) I-E | 10 minutes |
| (d) Barrier and Penetration | 30 minutes |

(e) I.P.A.T. 10 minutes

(f) C.F.P.T. 20 minutes

(g) Style Preference 15 minutes

(h) D A P 20 minutes

Total time approximately two hours (120 minutes).

4. A fee of two dollars was paid to each participating volunteer to cover parking expenses. (Appendix D)

## Description of Instruments

### General Information Questionnaire

The general information questionnaire was designed to obtain the personal data necessary to place the subjects into one of the four categories. The information requested was: age, weight at 21-22 years of age, approximate current weight and maximum weight. If the individual had experienced weight problems she was requested to answer additional questions to determine the age of onset of obesity, maximum weight, the number of pounds lost, the length of time that the weight loss had been maintained and whether or not she was presently on a weight reduction program. (Appendix B)

### The Holtzman Inkblot Technique

The Body Boundary Index was devised by Fisher and Cleveland (1968) to measure the degree to which a person perceives his body boundaries as firm and definite or weak and indistinct. The Penetration score was developed to indicate the degree to which a person experiences the body

boundaries as being easily penetrable. Penetration score, however, is not considered to be the direct opposite of Barrier. Based on the responses to the first twenty-five cards (Form A) of the complete Holtzman series of forty-five cards, two indexes are obtained: the Penetration and the Barrier index. The first 25 cards of the Holtzman Inkblot technique were used in slide form to allow group administration.

The scoring scheme used for Barrier differs from the original published in 1958 insofar as it includes all references to clothing, buildings and vehicles instead of selected instances of such cases. It also includes popular responses previously omitted, and masks. These changes have been made to simplify scoring by reducing the number of exceptions. Correlations between scores based on the old and the new more simplified criteria are of the order of .98 (Fisher, 1970). The scoring criteria for Penetration has also been simplified. Scores derived from the old criteria correlate on the order of .98 with scores based on the new simplified criteria (Fisher, 1970). Kernaleguen (1968), Torreta (1968), Dowdeswell (1972) and Holtzman et al. (1961) have reported Barrier scores from various research. The first three used only 25 cards, while Holtzman based his findings on all 45 items. Close agreement was found between Kernaleguen and Torreta, with samples of college women, both using the 25 cards of Form A. Reservations must be made

when comparing these with the norms established by Holtzman using all 45 cards.

Table 1

Comparison of Range, Mean and Standard Deviation for Barrier Scores Obtained on the Holtzman Inkblot Test

| Study | n | Test Items | Range | Mean | SD |
|---|---|---|---|---|---|
| Kernaleguen (1968) | 68 | 25 | 2-15 | 7.61 | 3.4 |
| Torreta (1968) | 27 | 25 | 2-12 | 6.85 | 3.18 |
| Kernaleguen (1970) | 40 | 25 | - | 6.53 | 3.23 |
| Dowdeswell (1972) | 56 | 25 | 0-10 | 4.68 | 2.42 |
| Holtzman (1961) | 252 | 45 | - | 5.92 | 3.50 |

Table 2

Comparison of Range, Mean and Standard Deviation for Penetration Scores Obtained from the Holtzman Inkblot Test

| Study | n | Test Items | Range | Mean | SD |
|---|---|---|---|---|---|
| Dowdeswell (1972) | 25 | 25 | 0-14 | 3.21 | 2.58 |
| Kernaleguen (1970) | 40 | 25 | - | 3.30 | 2.13 |
| Holtzman (1961) | 252 | 45 | - | 2.85 | 2.61 |

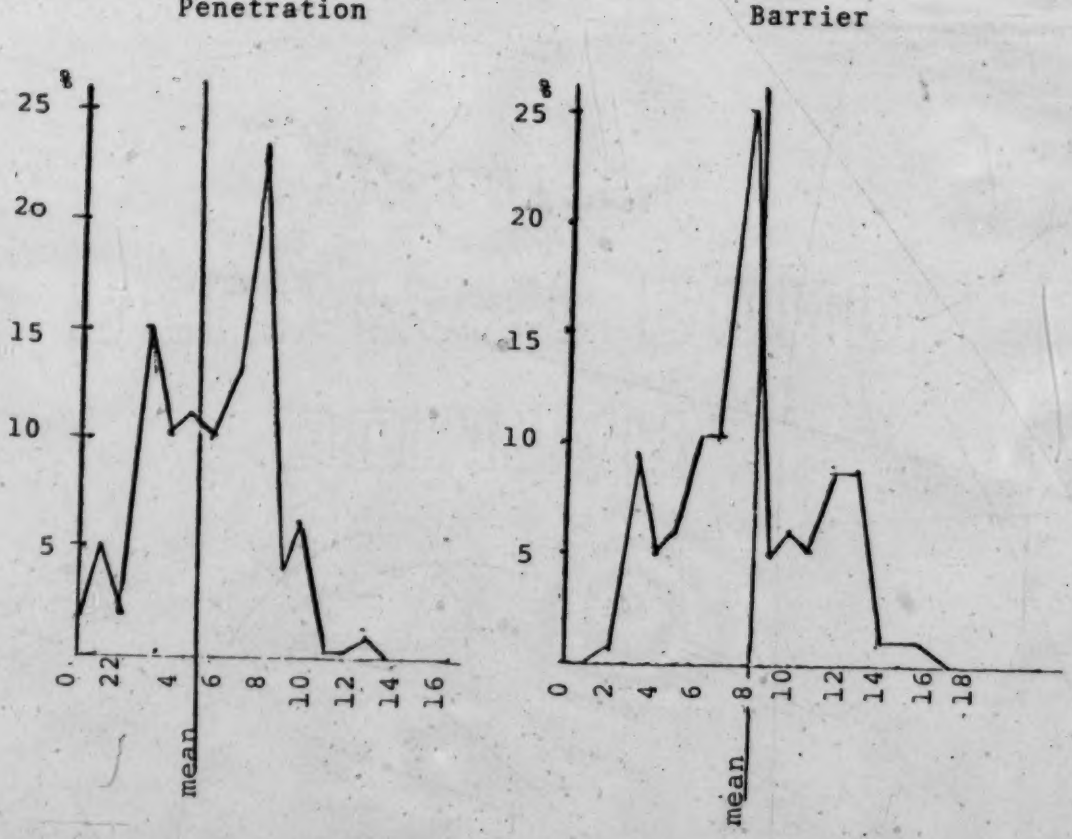
Kernaleguen (1970) and Dowdeswell (1972) have found a correlation of $p < .05$ between Barrier and Penetration scores for

women. Direct comparison of scores with those reported by Holtzman et al. (1961) is impossible since norms were based on forty-five inkblots instead of the twenty-five used by Kernaleguen (1968, 1970), Torreta (1968), and Dowdeswell (1972).

Baer's (1970) frequency polygon of Barrier scores for a college sample of n = 102 indicates a normal distribution with a strong and distinct single mode somewhat below the sample mean, illustrating the fact that there is a predominance of subjects with relatively low body boundary definiteness. The frequency distribution for penetration scores presents the opposite picture with a definite preponderance of high scores indicative of the fact that the majority of subjects were also high in body penetration. These findings of the two opposite indices could be said to substantiate each other.

Diagram I

Baer's Frequency Polygon for Barrier and Penetration Scores




The scoring done by Fisher followed the procedure outlined by Fisher (1970). The Barrier score is the total number of Barrier responses given to the 25 slides. A credit of 1 is given if a Barrier response is recorded. A score of 0 is given if a Barrier response is absent. No more than 1 credit can be given for each slide no matter how many Barrier images it contains. The Penetration

scoring is similar to the Barrier scoring, that is, a credit of 1 is assigned to any slide response no matter how many penetration images it produces. It must be noted however that a response may be simultaneously scored Penetration and Barrier, e.g.

"Volcano erupting", "broken vase."
'B' 'P' 'P' 'B'

Holtzman (1961) reported a study indicating an intra-scorer reliability of .90 and inter-scorer reliability of .84. The Body Boundary Index differentiates subjects with different types of body image (Fisher and Cleveland, 1968). In addition, the Barrier score relates to the degree of expressive spontaneity and to independence from social influence (Fisher and Cleveland, 1968). Barrier score has been found to relate to imagination and ego differentiation (Holtzman, 1961). In this study the Holtzman Inkblot Test was group administered with colored slides. The administration followed the standard procedure for the slide presentation. All Holtzman protocols were scored by Fisher.*

Draw A Person Test

Figure drawing is used to study the individual's perception of the body in space. It offers direct testimony of the subject's subconscious projection rather than a verbal description of the body.

---

*Appreciation is expressed to Dr. Fisher for marking the protocols.

The drawing of a person represents the expression of the self or body in the environment. What is expressed may be regarded as the body image, or a complex reflection of self regard or self image. The image that constitutes the figure drawn is intimately tied to the self and all its ramifications.

The ideal female figure outline for this test has been adapted from The Nude (Willis) and Drawing the Figure (Iredell). The basic proportional scale for the figure uses the head as a unit of measure and more or less classic proportions of the female figure. The average woman is from six to seven heads tall, one and one half heads wide at the hip line, nearly two heads wide at the shoulder line while the waist is almost one head wide. The figures used for this study were seven heads tall. (Appendix E)

There are three variations of the figure; front, back and side view. Each figure is presented standing on a ground line which provides the basis for measuring the differences between the model drawing and the subject's drawing. (Appendix F)

The scoring of the drawing was done by placing an 8 1/2" x 11" clear plastic plate over the subject's drawings. This clear plastic plate contains a grid of 1/8" squares and the outline drawing of the model figure with the ground line in the same position as on the original transparency. A count of the squares was done to deter-

mine the degree of distortion of the subjects' body image drawing. Ratios were calculated to provide a numerical score. The back view only was used for counting squares to determine area and calculating ratios (Appendix F). The torso included the area from the gluteal fold to the base of the head. The head included the area from the base to the top of the head. In determining the position of the drawing on the page: 2/3 of the drawing was considered to be either right or left of centre. A transparency was laid over the drawing to determine the slope of the shoulder.

Each subject was presented with three 8 1/2" x 11" sheets of blank paper and a moderately soft pencil. For this particular D A P study, each of the three outline drawings of the ideal figure was projected onto a screen by an overhead projector for 5 seconds before the subject began to draw. The transparencies were projected in this order: front, back, and side view. The subjects were instructed to study each drawing for the 5 seconds, and then copy the drawings as accurately as possible. They were asked to complete each drawing in 5 minutes and be certain to draw in the ground line for each picture. They were assured that skill was not important and to do the best they could in drawing the figures. The test took no more than 20 minutes to complete.

The Institute for Personality and Ability Testing Anxiety Test

The I.P.A.T. Anxiety Scale was designed to be a brief, valid, nonstressful and objective measure of free floating manifest anxiety level. It was developed by Cattell and his associates at the Institute for Personality and Ability Testing. The anxiety scale consists of 40 questions distributed among the five anxiety measuring components which are: defective integration, lack of sentiment; ego weakness, lack of ego strength; suspiciousness or paranoid insecurity; guilt proneness; and frustrative tension or id pressure.

Of the 40 items, 20 are considered less subtle and provide a measure of overt, conscious anxiety; the remaining 20 questions provide a measure of covert or hidden anxiety. The total anxiety score is based on all 40 questions. Each question has three alternative answers. A numerical score from 0-80 is obtained and the raw score may be converted to percentile scores for analysis and interpretation.

Construct validity was estimated at +.85 to +.95 for the total scale (Cattell and Scheier, 1933, p. 7). Cattell and Scheier (1963) claim concrete validity for their scale citing substantial correlations with psychological, behavioral and laboratory tests of anxiety. The correlation between clinical consensus and the IPAT anxiety scores range from +.30 to +.40.

Reliability (consistency) coefficients for the total anxiety score range from +.80 to +.93, depending on the type and nature of the group. Test and retest scores after 12

weeks indicated a reliability coefficient of +.93 for male and female adults, and +.87 for a sample of Japanese students. Split half reliabilities for homogeneity was reported as +.84 for 240 normal adults.

Locus of Control (I-E)

A construct known as the locus of control, the internal-external control, or the I-E variable was developed within the framework of Rotter's Social Learning Theory (Rotter, 1954, 1972). It refers to a generalized expectancy concerning the contingency between one's behavior and subsequent reinforcements. An internal or "I" person is one who perceives that most events in his life can be regulated by factors intrinsic to himself, i.e., behavior, skills, and personal attributes which he can possess or acquire. An external or "E" individual is one who perceives that most events are due to factors beyond his control, i.e., fate, luck, or the manipulation by unpredictable others (James, 1973).

The James I-E Scale is a 60-Item Likert type scale containing 30 items designed to measure locus of control, and 30 filler items covering a variety of opinion statements. The I-E score is the sum of the 30 relevant items and thus the range can be from 0 to 90. High scores indicate high externality whereas low scores indicate low externality or internal control. The I-E items are all

phrased and scored in the direction of externality. Split half reliabilities ranging from .86 to .93 have been obtained with this I-E scale. Retest reliabilities ranging from .74 to .84 have also been found. This test was standardized in both Canada and the United States in 1958 and again in 1972.

Factor analysis, using a Kaiser Varmax rotation method found no difference in factorial structure between sexes or countries although there were differences in factor loading. Factor 1 appears to involve a generalized expectancy that personal events in one's life are governed largely by chance or fate. Factor 2 appears to be a generalized expectancy concerning the ability to predict and control the behavior of other people and of institutions.

Table 3

Factor Analysis of James's I-E Scale

| | Factor 1 | Factor 2 |
|---|---|---|
| American Males | 31% of variance | 13% of variance |
| American Females | 36% of variance | 14% of variance |
| Canadian Males | 40% of variance | 36% of variance |
| Canadian Females | 44% of variance | 23% of variance |

Although Rotter's forced choice scale has been widely used, the Jame's Likert-type scale was the one chosen for the following reasons:

1. The James I-E scale has Canadian as well as American norms established in 1958, and in 1972 following the restandardization which involved changes in the filler items only.
2. Joe (1971) and Hjille (1971) reported that a sizeable number of the internal items on the Rotter scale were rated significantly more socially desirable than the corresponding external items. There is a suggestion that internals may respond to a higher social need.
3. There is evidence that Rotter's 23-item forced choice scale yields a leptokurtic, somewhat positively skewed distribution and is factorily more complex than is desirable in an undimensional scale (Cone, 1971, Lao, 1970).
4. James and Shepel (1973) have found that some subjects particularly a non-university population, become irritated and non-cooperative with a forced choice format.

The Compton Fabric Preference Test

The C.F.P.T. consists of 78 colored slides of 5" x 7" swatches cut from apparel fabrics purchased on the retail market. Each pair of swatches, labelled "A" and "B" is mounted on a numbered card. Using swatches rather than garments controls style and construction variables that might influence clothing preferences (Compton, 1965). It has been converted from its original fabric swatch form to reproducible 35 mm.

colored slides (Compton, 1966).

Five series of slides, three of color, one of design, and one of texture with two fabrics on each slide, constitutes the Compton Fabric Preference Test (Compton, 1965). Fabrics on each slide differ with respect to one of the following variables.

A. Chroma. (Saturation and value). There are eighteen pairs of fabrics using one of the following hues: red, yellow, orange, blue, green and purple. For a given hue each of the three color dimensions is presented for comparison with each of the other two dimensions so that a total of eighteen paired comparisons is made.

1. Saturated color
2. Tints of color
3. Shades of color

B. Figure ground value contrast. There are fifteen pairs of patterned fabrics using

1. Strong contrast
2. Weak contrast

C. Warm-Cool dimensions of color. There are fifteen fabric pairs using

1. Warm color
2. Cool color

D. Design size. There are fifteen slides of pairs of fabrics showing

1. Large design

2. Small design

E. Texture. There are fifteen slides showing fabric pairs of

1. Rough texture
2. Smooth texture

A concurrent validity study was conducted with the C.F.P.T. to determine whether subjects would respond to fabric and slide forms of the test in the same manner. Approximately one month elapsed between the two administrations. Correlations between preferences on the fabric and slide forms of the test were significant for all color, texture and design variables ($p.<.01$). It was therefore concluded that the subjects respond to the slide presentations of the test in much the same way as they respond to the presentations of actual fabric swatches (Compton, 1966).

Test-retest reliability coefficients for the scale were calculated for a group of 27 students enrolled in the College of Family Life at Utah State University. There was a lapse of one month between listings. The correlations for color and texture variables were significant at the .01 and the .05 level. It was concluded, therefore, that the C.F.P.T. is reliable (Compton, 1966).

A total of twelve points is possible for any one of the color variables, saturated, tint and shade. A score of twelve points for any of these color variables may be con-

sidered an expression of strong preference for that aspect of color. Fifteen points may be scored for any one of the other color, design and textile variables. A score of twelve to fifteen points for any one of these variables may be considered a strong preference for it (Compton, 1965).

## The Style Preference Test

### Rationale

If it is true that an obese person is unhappy with her body or body parts; is obsessed with her body image; feels vulnerable because of excess weight or loss of weight; believes she is perceived as ugly, misshapen or unworthy; is lacking in self confidence; then she will choose clothing which disguises, conceals or otherwise constructs a façade which, to her, provides a socially acceptable body image. Furthermore, she may choose clothing which would reinforce body boundaries, and avoid bulky garments, which although they conceal, tend to make an individual appear and feel larger.

The objective of the style preference test is to measure the degree to which a person feels compelled to camouflage or conceal the body or body defects. The loose and concealing garments are designed to camouflage the body imperfections and conceal the body from public view. The fitted and revealing garments outline the figure and

reveal in varying degrees certain parts of the body.

Description of the Test

The instrument consists of 18 slides. Each slide contains two drawings labeled "A" or "B", resulting in a forced choice test for style preference. Two series of slides are projected. Series I consists of ten paired dress styles differing with respect to loose or fitted garments. Fitted-loose score is obtained from this series, with a range of 0-10. A high score indicates a preference for loose, camouflaging styles while a low score suggests a preference for fitted ones. Series II consists of 8 slides of paired dress styles differing with respect to a revealing or concealing garment. A conceal-reveal score is obtained from this series. The score may range from 0-8. A high score indicates a preference for revealing styles of garment while a low score is indicative of a preference for concealing fashions.

Reliability for the Style Preference Test was established by administering it to 108 subjects. The items in both series were rank ordered and split-half correlations were calculated as well as a t-test for significance of the r value (Siegel 1956). The Loose score produced a correlation of $r_s$ + .32, significant at $p < .005$; the Reveal score $r_s$ + .17, significant at $p < .05$. It was concluded that the test was reliable.

## DREAM COSTUME

The concept, 'dream costume,' is designed to determine the costume image projected by subjects. It allows a person to image herself clothed in garments which may not be suited to her particular body build or to the psychological 'set' in her usual choice of clothes. On the other hand, an individual may project a 'real self image' or an image of herself as she actually clothes herself.

In a 'dream costume,' a woman can imagine the feel of a slinky gown and the sexiness of it, or she may dream of expensive, elegant, fashionable garments which are not available to her for social or economic reasons. The 'dream costume' allows her to alter the physical and psychological aspects of her body image, without actually having to face social acceptability of such apparel. There may be some women who cannot project a 'dream costume' which deviates to any extent from their normal clothing patterns.

### Procedure

The subject was asked to describe her dream costume. The instructions were:

"Imagine that you can have and wear one outfit you desire. Describe in detail your 'dream costume.'"

The data from the descriptions was then divided into four categories:

A. Type of apparel
   1. Long evening wear
   2. Day wear
   3. Late afternoon
   4. Sports wear

B. General style of garment
   1. Revealing
   2. Concealing

C. Accessories

D. Shoes

The costume was considered concealing if a cape or coat covered the entire dress, or if the fabric covered most of the body. Percentages were calculated in each category for each group of subjects and for the total group.

## The Skinfold Measurement as a Method of Determining Percentage Body Fat

Regression equations have been formulated, on the basis of skinfold measurements, for the prediction of specific gravity (density) and hence the percentage of body weight which is fat. Mean density has been found not to change until the fifth decade, 40 - 50 years of age; therefore, women between thirty and forty years of age may be measured by using the same measurement and equation as for women of seventeen to thirty years of age. After the fortieth year there is a change in body 'fatness' with each decade. The mean density decreases by decade and thus body fatness increases. There is an indication that the fat is more central and not subcutaneous (Young, 1963).

### Procedure

For young women, ages 17 - 30 years, the equation for predicting specific gravity is based on the pubic measurement (taken on the midline, half-way between the umbilicus and the pubis) and percentage body fat (Young, 1962). The equation for older women, ages 40 - 70 years, is based on four measurements.

Measurements were assessed in the following locations: (a) the chin, a skinfold taken under the mandible with a peak of skinfold extending from the chin to the neck, mid-way between the larynx and the tip of the chin.

(b) the chest, a skinfold taken at the mid-axillary border of the pectoralis major at the xyphoid level on the mid-axillary line.

(c) the abdomen, a skinfold taken just to the right of the umbilicus.

(d) the supra-illiac, a skinfold taken on the mid-axillary line (the skinfold runs forward and slightly downward (Young, 1964). Subjects were in the supine position for measurement of the pubis and umbilicus, while the chin, chest, and supra-iliac measurements were taken with the subject standing.

1. The skinfold measurements were taken with a Lange caliper calibrated to exert a pressure of 10 gm. per square millimeter jaw surface.

2. The skinfold was grasped firmly and cleanly from the underlying tissue with the thumb and adjacent finger. The span of the grasp was dependent upon the thickness of the skinfold. The size of the fold was enough to include two thicknesses of skin and subcutaneous fat but no muscle. The caliper was applied to the skinfold exactly one cm. below the fingers so that the pressure at that point was exerted by the caliper faces. The dominant side of the body was preferred.

3. Three measurements were taken at each site on the body and the average of these three measurements used in the calculations for determining specific gravity. (Appendices

C and G)

## Analysis of Data

The data as reported both descriptively and statistically. For all statistical tests the probability of $p < .05$ was considered significant. Appendix H gives the directional ratings for all variables.

## Human Research Review

All research involving human subjects conducted under The University of Alberta's auspices requires approval of a Human Research Committee to protect the individuals and ensure that they are not subject to any psychological or physical risk. In compliance with this regulation, the data-gathering instrument, proposal and necessary forms were first submitted to the Students' Advisory Committee on July 24, 1974. On the recommendation of this committee final approval was granted by the General Faculties Council Committee on Research on July 30, 1974.

## Null Hypotheses

I. There will be no significant differences among the overall mean scores (adjusted to remove the effect of age) for the four weight groups with respect to the following categories of variables:

   a. The Physical Variables.

   b. The Clothing Variables.

   c. The Psychological Variables.

   d. The Draw A Person Variables.

II. a. For the variables on which the four groups are significantly different from each other, there will be no significant intercorrelation among the variables in each group.

   b. For the variables on which the four groups are not significantly different from each other, there will be no significant intercorrelation among the variables for the total group.

# CHART I

## Range and Directional Ratings for All Variables

| Variables | Range | High Score | Low Score |
|---|---|---|---|
| I-E | 0 - 90 | External | Internal |
| Barrier | 0 - 25 | High barrier score | Low body barrier |
| Penetration | 0 - 25 | Vulnerable | Low vulnerability |
| IPAT | 0 - 80 | High anxiety | Low anxiety (lack of) |
| Style Preference: | | | |
| Loose | 0 - 10 | Prefer loose style | Prefer fitted style |
| Reveal | 0 - 8 | Prefer revealing style | Prefer concealing style |
| C.F.P.T. | 0 - 12 for color variables of saturated tint shade<br>0 - 15 for other color, design size and texture variable | Strong preference for color, design, size and texture variables | Least preference for any one of the variables |
| D A P Ratios | | | |
| | Height of Figure / Width at Waist | Small waist in relation to figure height - smaller than model | Wide waist in relation to figure height - wider than model |
| | Average Width of Torso = Torso Area / Length of Torso | Torso drawing wider than model | Torso drawing narrower than model |
| | Torso Area / Head Area | Head small in relation to torso as compared to model | Head large in relation to torso as compared to model |
| | Figure Length / Head Length | More than 7 heads tall | Less than 7 heads tall |
| | Head Area in 1/8" squares | Larger than model | Smaller than model |

# CHAPTER IV

## FINDINGS

This chapter contains the results of both the descriptive and the statistical analysis of the data collected. The descriptive analysis consists of the measures of central tendency for all variables, as well as a comparison with established norms or with results of research on comparable groups. The analysis of the Dream Costume is also included.

The statistical analysis was divided into three sections, namely: the Chi square analysis of the D A P Test, the analysis of covariance testing for significant differences among the four groups on all variables, and the Pearson Product-Moment correlation analyzing the association among variables. Finally, a statement pertaining to the rejection of, or failure to reject, the null hypotheses concludes the chapter.

## DESCRIPTIVE ANALYSIS

### Measures of Central Tendency for the Physical Variables

The average height of the four groups is shown in Table 4. The N/N were the tallest, the N/F the shortest, while the F/N and N/F were of identical mean height.

Table 4

Average Height of the Subjects in each Group

| N/N | F/N | N/F | F/F |
|---|---|---|---|
| 5'5 1/2" | 5'4 1/2" | 5'4" | 5'4 1/2" |

Table 5 reveals that the mean age for all groups fell in the 40-50 years of age range. The N/N and F/F had a mean age slightly lower than the other groups, indicating that these two groups were younger.

Table 5

Measures of Central Tendency for Age

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 42.80 | ±8.65 | 30-63 |
| N/N | 20 | 40.15 | ±6.80 | 30-58 |
| F/N | 19 | 44.15 | ±7.70 | 30-60 |
| N/F | 21 | 46.38 | ±8.30 | 30-63 |
| F/F | 20 | 40.50 | ±9.60 | 30-62 |

Actual weight showed a rise in means from categories N/N to F/F (Table 6). In groups N/F and F/F there was a greater deviation from the means than in N/N and F/N groups.

Table 6

Measures of Central Tendency for Actual Weight in Pounds

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 157.79 | ±32.66 | 97-266 |
| N/N | 20 | 129.40 | ±14.03 | 97-156 |
| F/N | 19 | 141.79 | ±12.89 | 117-168 |
| N/F | 21 | 171.20 | ±24.92 | 141-246 |
| F/F | 20 | 188.80 | ±33.34 | 129-266 |

Percentage standard weight, reported in Table 7, was used along with actual weight shown in Table 5, to determine the composition of each group. If standard weight equals 100, then a ten percent plus or minus deviation is considered normal weight. Overweight is considered to be 11%-20% above standard weight, and obese is over 20% above standard weight. The range of percentage standard weight for the F/N group exceeded the upper limits allowed for the normal group. This was due to the fact, however, that the near normal weights of certain subjects were established on the basis of consultations with their physicians.

Table 7

Measures of Central Tendency for

Percentage Standard Weight

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 119.02 | ±21.75 | 84-183 |
| N/N | 20 | 97.15 | ± 7.27 | 84-110 |
| F/N | 19 | 106.89 | ± 6.98 | 96-119 |
| N/F | 20 | 131.14 | ±14.38 | 113-167 |
| F/F | 21 | 139.70 | ±19.68 | 117-183 |

Table 8 reports the findings for percentage body fat. There are no norms available to indicate what percentage body fat is considered overweight or obese (Young, 1974). The N/F and F/F, had higher means for percentage body fat than did the N/N and F/N.

Table 8

Measures of Central Tendency for Percentage Body Fat

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 37.09 | ± 10 | 21.50-63.20 |
| N/N | 20 | 28.07 | ±6.55 | 21.50-40.60 |
| F/N | 19 | 32.90 | ±5.55 | 24.50-42.70 |
| N/F | 21 | 43.60 | ±6.98 | 32.20-57.10 |
| F/F | 20 | 43.79 | ±9.76 | 32.10-63.20 |

Young (1963) divided her subjects into age groups and developed norms for women of normal weight as shown in Table 9.

Table 9

Means and Standard Deviations for Percentage Body Fat for Women of Normal Weight (Young, 1963)

| Age in Years | Mean % Fat | SD |
|---|---|---|
| 30-40 | 28.75 | ±7.33 |
| 40-50 | 35.33 | ±5.70 |
| 50-60 | 41.88 | ±6.49 |
| 60-70 | 44.56 | ±6.53 |

It was difficult to compare the percentage body fat of the women in this study whose age range was great to Young's standards for women 40 - 50 years of age. The mean age, however, of the N/N and F/N was 40.15 and 44.15 years res-

pectively and the percentage body fat of these two groups may be said to compare favorably with Young's women of normal weight (Table 10).

Table 10

Measures of Central Tendency for

Young's (1963) and Avery's (1978) Samples

| Young (1963) | | n | Age | Mean % Fat | SD |
|---|---|---|---|---|---|
| | | 27 | 40-50 yrs | 35.33 | ±5.70 |
| Avery (1978) | Group | n | Mean Age | Mean % Fat | SD |
| | N/N | 20 | 40.15 | 28.07 | ±6.55 |
| | F/N | 19 | 44.15 | 32.90 | ±5.55 |

Measures of Central Tendency for Clothing Variables

Compton's Fabric Preference Test

The means for saturated color preference shown in Table 11 were all higher than Compton's study of housewives in Idaho and Utah (Compton, 1963). The F/F, however, indicated a greater preference for saturated color with a mean of 9.10 and SD of 1.80. The N/F group exhibited the least preference for saturated colors with a mean of 7.61.

Table 11

Measures of Central Tendency for Preference of Saturated Colour

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 8.45 | 1.78 | 4-12 |
| N/N | 20 | 8.70 | 1.62 | 5-11 |
| F/N | 19 | 8.42 | 1.02 | 6-10 |
| N/F | 21 | 7.61 | 2.18 | 4-11 |
| F/F | 20 | 9.10 | 1.80 | 6-12 |
| Compton (1963) Idaho Homemakers | 26 | 5.92 | - | - |
| Compton (1963) Utah Homemakers | 27 | 7.22 | - | - |

Table 12 revealed that tints were preferred by the N/F group while the F/F showed the lowest interest in tints. The mean score for tints of the N/F group is comparable to the mean scores for tints of Compton's Utah and Idaho homemakers.

Table 12

Measures of Central Tendency for Preference of Tint

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 5.44 | 2.63 | 0-12 |
| N/N | 20 | 5.10 | 1.97 | 1-9 |
| F/N | 19 | 5.63 | 2.69 | 1-10 |
| N/F | 21 | 6.85 | 2.95 | 3-12 |
| F/F | 20 | 4.10 | 2.15 | 0-8 |
| Compton (1963) Idaho Homemakers | 26 | 6.58 | - | - |
| Compton (1963) Utah Homemakers | 27 | 6.37 | - | - |

Table 13 shows that the mean score for shades were highest for the F/F group and lowest for the N/F. Compton's Utah homemakers related more closely to F/F than any other group.

Table 13

Measures of Central Tendency for Preference of Shade

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 3.98 | 2.13 | 0-10 |
| N/N | 20 | 4.00 | 1.78 | 1-8 |
| F/N | 19 | 3.79 | 2.41 | 0-10 |
| N/F | 21 | 3.38 | 2.18 | 0-9 |
| F/F | 20 | 4.44 | 2.11 | 2-9 |
| Compton (1963) Idaho Homemakers | 26 | 5.50 | - | - |
| Compton (1963) Utah Homemakers | 27 | 4.41 | - | - |

Table 14 indicates that the F/N group showed the highest mean score for strong figure ground contrast. All other groups had similar mean scores which were in close agreement with the Utah homemakers.

Table 15 shows that the F/N group exhibited the lowest mean score for weak contrast. This substantiates the findings in Table 14. The mean for the other groups were very similar to each other and to the results of Compton's study.

Table 14

Measures of Central Tendency for Preference of Strong Figure Ground Contrast

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 9.69 | 2.88 | 2-14 |
| N/N | 20 | 9.50 | 3.17 | 2-14 |
| F/N | 19 | 10.52 | 2.61 | 4-14 |
| N/F | 21 | 9.42 | 2.64 | 4-13 |
| F/F | 20 | 9.34 | 3.08 | 2-14 |
| Compton (1963) Idaho Homemakers | 26 | 7.69 | - | - |
| Compton (1963) Utah Homemakers | 27 | 9.93 | - | - |

Table 15

Measures of Central Tendency for Preference of Weak Figure Ground Contrast

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 5.25 | 2.90 | 1-13 |
| N/N | 20 | 5.54 | 3.26 | 1-13 |
| F/N | 19 | 4.26 | 2.64 | 1-11 |
| N/F | 21 | 5.47 | 2.56 | 2-11 |
| F/F | 20 | 5.64 | 3.08 | 1-13 |
| Compton (1963) Idaho Homemakers | 26 | 7.31 | - | - |
| Compton (1963) Utah Homemakers | 27 | 5.07 | - | - |

Table 16 shows that the N/F group had the highest mean score for large designs and the N/N the lowest. The opposite was true for small design (Table 17).

Table 16

Measures of Central Tendency for Preference of Large Design

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 5.65 | 3.35 | 0-13 |
| N/N | 20 | 4.84 | 2.87 | 1-10 |
| F/N | 19 | 5.63 | 3.37 | 0-13 |
| N/F | 21 | 6.81 | 3.51 | 0-13 |
| F/F | 20 | 5.25 | 3.51 | 0-12 |
| Compton (1963) Idaho Homemakers | 26 | 4.23 | - | - |
| Compton (1963) Utah Homemakers | 27 | 7.04 | - | - |

Table 17

Measures of Central Tendency for Preference of Small Design

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 8.36 | 3.35 | 1-14 |
| N/N | 20 | 9.15 | 2.87 | 4-13 |
| F/N | 19 | 8.36 | 3.37 | 1-14 |
| N/F | 21 | 7.19 | 3.52 | 1-14 |
| F/F | 20 | 8.75 | 3.51 | 2-14 |
| Compton (1963) Idaho Homemakers | 26 | 10.77 | - | - |
| Compton (1963) Utah Homemakers | 27 | 7.96 | - | - |

Table 18 illustrates that the F/N group had the greatest mean score for warm colour, followed by the F/F group. Both means were higher than Compton's Homemakers. Conversely, the N/N and N/F revealed a higher mean score for cool colour, with means of 9.19 and 9.04 respectively (Table 19).

Table 18

Measures of Central Tendency for Preference of Warm Colours

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 7.72 | 3.89 | 0-15 |
| N/N | 20 | 6.84 | 4.28 | 1-14 |
| F/N | 19 | 9.16 | 3.67 | 1-15 |
| N/F | 21 | 6.95 | 3.73 | 1-13 |
| F/F | 20 | 8.04 | 3.66 | 0-13 |
| Compton (1963) Idaho Homemakers | 26 | 7.31 | - | - |
| Compton (1963) Utah Homemakers | 27 | 6.93 | - | - |

Table 19

Measures of Central Tendency for Preference of Cool Colours

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 8.27 | 3.88 | 1-16 |
| N/N | 20 | 9.19 | 4.28 | 2-15 |
| F/N | 19 | 6.84 | 3.67 | 1-15 |
| N/F | 21 | 9.04 | 3.73 | 3-15 |
| F/F | 20 | 7.89 | 3.58 | 3-16 |
| Compton (1963) Idaho Homemakers | 26 | 7.69 | - | - |
| Compton (1963) Utah Homemakers | 27 | 8.07 | - | - |

The F/N group, Table 20, showed the lowest mean score for rough textured fabrics with a mean similar to Compton's Idaho homemakers, while the other groups had means similar to Compton's Utah Homemakers.

Table 20

Measures of Central Tendency for Preference of Rough Texture

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 7.46 | 4.08 | 0-15 |
| N/N | 20 | 8.14 | 4.00 | 2-15 |
| F/N | 19 | 5.58 | 3.37 | 1-11 |
| N/F | 21 | 8.05 | 4.41 | 1-15 |
| F/F | 20 | 7.95 | 4.17 | 0-15 |
| Compton (1963) Idaho Homemakers | 26 | 5.42 | - | - |
| Compton (1963) Utah Homemakers | 27 | 8.45 | - | - |

Table 21 shows that mean scores for smooth textured fabrics were definitely higher for the F/N group, which substantiates the findings in Table 20. The F/N group was similar in their preference for texture to the Idaho homemakers in Compton's study, while the other four groups were similar to those in the Utah study.

Table 21

Measures of Central Tendency for Preference of Smooth Texture

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 7.52 | 4.09 | 0-15 |
| N/N | 20 | 6.85 | 4.00 | 0-13 |
| F/N | 19 | 9.42 | 3.37 | 4-14 |
| N/F | 21 | 6.90 | 4.40 | 0-14 |
| F/F | 20 | 7.05 | 4.17 | 0-15 |
| Compton (1963) Idaho Homemakers | 26 | 9.58 | - | - |
| Compton (1963) Utah Homemakers | 27 | 6.56 | - | - |

Measures of Central Tendency for Style Preference Test

Table 22 illustrates that loose styles were chosen by the F/F and N/F as being most desirable. The N/N and F/N preferred a more fitted style.

Table 22

Measures of Central Tendency for Preference of Loose Styles

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 4.16 | 1.67 | 0-8 |
| N/N | 20 | 3.60 | 1.96 | 0-7 |
| F/N | 19 | 3.58 | 1.30 | 1-6 |
| N/F | 21 | 4.38 | 1.75 | 0-8 |
| F/F | 20 | 5.50 | 1.15 | 3-6 |

The F/N, as reported in Table 23, had the highest mean score for more revealing styles, while the N/F had the lowest mean score for revealing styles.

Table 23

Measures of Central Tendency for Preference of Revealing Styles

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 3.38 | 1.51 | 0-7 |
| N/N | 20 | 3.20 | 1.73 | 0-7 |
| F/N | 19 | 3.95 | 1.43 | 1-6 |
| N/F | 21 | 2.81 | 1.25 | 0-5 |
| F/F | 20 | 3.60 | 1.46 | 2-6 |

Measures of Central Tendency for the Psychological Variables Anxiety, I-E, Barrier and Penetration

As shown in Table 24 the N/N group had the lowest mean for anxiety and the closest mean to that found in the Cattell study of men and women (1963). All other means were slightly elevated with the F/F having the highest mean. Cattell studied both men and women which may account for the higher anxiety level when the groups are composed entirely of women.

Table 24

Measures of Central Tendency for Anxiety

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 34.51 | 12.38 | 4-62 |
| N/N | 20 | 29.64 | 11.74 | 4-47 |
| F/N | 19 | 35.84 | 10.27 | 16-56 |
| N/F | 21 | 34.14 | 10.95 | 17-62 |
| F/F | 20 | 38.50 | 15.16 | 9-61 |
| Dowdeswell (1972) Pregnant Women | 56 | 31.98 | 10.37 | 7-58 |
| Cattel (1963) | 405 | 28.6 | 11.3 | - |

Table 25 reveals that the N/N had the lowest internal score. The mean for the N/N group was lower than either mean in James's studies of Canadian women for 1958 and 1972. The total group (n = 80) had an I-E mean score similar to that reported in James's study of Canadian women in 1972. There was little difference among the means of the other three groups.

Table 25

Measures of Central Tendency for Internal-External Dimensions

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 40.11 | 10.06 | 17-68 |
| N/N | 20 | 34.45 | 8.09 | 19-51 |
| F/N | 19 | 41.68 | 10.58 | 20-68 |
| N/F | 21 | 42.38 | 10.65 | 17-65 |
| F/F | 20 | 41.90 | 9.20 | 27-58 |
| James (1958) Canadian Females | 381 | 36.38 | 8.87 | - |
| James (1972) Canadian Females | 526 | 39.87 | 10.24 | - |

The N/N exhibited a slightly higher mean for Barrier than did the other groups (Table 26). This mean approached agreement with the mean established by Holtzman in 1961. The means for the other four groups compared favourably with the mean established by Dowdeswell in her study of pregnant women but were lower than those reported by Holtzman, Torreta, and Kernaleguen.

Table 26

Measures of Central Tendency for Barrier

| Group | Test Items | n | Mean | SD | Range |
|---|---|---|---|---|---|
| Total | 25 | 80 | 4.76 | 2.56 | 0-12 |
| N/N | 25 | 20 | 5.34 | 3.53 | 0-12 |
| F/N | 25 | 19 | 4.63 | 1.83 | 1-9 |
| N/F | 25 | 21 | 4.28 | 1.76 | 1-8 |
| F/F | 25 | 20 | 4.80 | 2.76 | 0-9 |
| Kernaleguen (1970) | 25 | 40 | 6.53 | 3.23 | |
| Torreta (1968) | 25 | 27 | 6.85 | 3.18 | 2-12 |
| Dowdeswell (1972) | 25 | 56 | 4.68 | 2.42 | 0-10 |
| Holtzman (1961) | 45 | 252 | 5.92 | 3.50 | - |

For Penetration (Table 27), the F/F revealed a slightly higher mean than the other groups. The mean of the F/F group approached similarity with the mean established by Holtzman (1961), but all means were lower than Holtzman's norm. None was similar to the means reported by Dowdeswell or Kernaleguen.

Table 27

Measures of Central Tendency for Penetration

| Group | Test Items | n | Mean | SD | Range |
|---|---|---|---|---|---|
| Total | 25 | 80 | 1.61 | 1.46 | 0-7 |
| N/N | 25 | 20 | 1.80 | 1.44 | 0-5 |
| F/N | 25 | 19 | 1.11 | 1.79 | 0-7 |
| N/F | 25 | 21 | 1.38 | 0.97 | 0-4 |
| F/F | 25 | 20 | 2.15 | 1.46 | 0-4 |
| Kernaleguen (1970) | 25 | 40 | 3.30 | 2.13 | - |
| Dowdeswell (1972) | 25 | 56 | 3.21 | 2.58 | 0-14 |
| Holtzman (1961) | 45 | 252 | 2.85 | 2.61 | - |

Measures of Central Tendency for Draw A Person Variables

In comparing the height of the figure to the width at the waist (Table 28), the N/F revealed a slightly lower mean, indicating that the drawings were slightly wider at the waist than were those of the other groups, or the model. (Appendix G)

Table 28

Measures of Central Tendency for the Ratio of Height of Figure to Width at Waist

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 7.53 | 1.89 | 3.40-15.40 |
| N/N | 20 | 7.80 | 1.70 | 4.90-11.10 |
| F/N | 19 | 7.47 | 2.41 | 4.10-15.40 |
| N/F | 21 | 6.90 | 1.85 | 3.40-10.60 |
| F/F | 20 | 7.96 | 1.45 | 5.90-10.20 |
| Model | 1 | 8.14 | - | - |

Table 29 reports the ratio of the area of torso to length of torso and discloses that the N/N and F/F drew slightly wider torsos than did the other three groups, although all means were closely related to one another.

Table 29

Measures of Central Tendency for the Ratio of the Area of Torso to the Length of the Torso

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 9.08 | 2.24 | 3.70-13.60 |
| N/N | 20 | 9.34 | 2.32 | 6.30-12.60 |
| F/N | 19 | 8.84 | 2.38 | 4.40-13.10 |
| N/F | 21 | 8.30 | 2.06 | 3.70-12.80 |
| F/F | 20 | 9.84 | 2.05 | 5.50-13.60 |
| Model | 1 | 8.94 | - | - |

In comparing the ratio of head area to torso area (Table 30), the results showed that the F/N and N/F drew heads which were larger in relation to the torso area than did the F/F group. The N/N group drew smaller heads than was demonstrated by the model (Appendix G).

Table 30

Measures of Central Tendency for the Ratio of Head Area to Torso Area

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 6.15 | 2.23 | 2.80-19.30 |
| N/N | 20 | 7.43 | 3.24 | 3.50-19.30 |
| F/N | 19 | 5.37 | 1.66 | 3.20-8.60 |
| N/F | 21 | 5.58 | 1.48 | 3.00-8.00 |
| F/F | 20 | 6.20 | 1.61 | 2.80-8.30 |
| Model | 1 | 6 | - | - |

Table 31 gives the ratio of figure length to head length and reveals that the model was 7.13 heads tall. The N/N drew the tallest figures in proportion to the length of the head, and the N/F the shortest figures. The F/N and F/F drew figures which were similar in ratio to that of the model (Appendix G).

Table 31

Measures of Central Tendency for

Ratio of Figure Length to Head Length

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 7.38 | 1.26 | 4.50-11.00 |
| N/N | 20 | 8.25 | 1.43 | 5.60-11.00 |
| F/N | 19 | 7.20 | 1.14 | 5.20-9.10 |
| N/F | 21 | 6.85 | 1.03 | 4.50-8.30 |
| F/F | 20 | 7.25 | 1.03 | 5.40-9.40 |
| Model | 1 | 7.13 | - | - |

In comparing the actual head area (Table 32) the largest heads were drawn by the F/N and F/F. The N/N and N/F drew smaller heads by actual count.

Table 32

Measures of Central Tendency for

Head Area in 1/8" Squares

| Group | n | Mean | SD | Range |
|---|---|---|---|---|
| Total | 80 | 44.35 | 23.03 | 14.75-99.99 |
| N/N | 20 | 40.89 | 24.29 | 14.75-99.99 |
| F/N | 19 | 48.07 | 25.53 | 15.00-98.00 |
| N/F | 21 | 39.13 | 22.48 | 10.75-78.75 |
| F/F | 20 | 49.75 | 19.44 | 18.00-86.00 |
| Model | 1 | 37.25 | | |

Percentage by Categories for Dream Costume

The descriptions of the dream costume were categorized as to the type of apparel, general style, and whether or not footwear and accessories were included as part of the costume. Table 33 gives the percentage in each group choosing one of the four distinct types of apparel, and one or the other of the two general styles. In addition, the percentage of the total number of subjects in each group describing some type of footwear and accessories is reported.

Table 33 reveals that the most popular type of dream costume was the evening gown, with the F/N having the greatest desire for this type of apparel. Concealing garments in one form or another were the most popular, the F/F, however, showed a slight preference for revealing garments. In each group, approximately half indicated an interest in shoes, while slightly over 50% of the subjects chose one accessory or more to accompany the costume described.

Table 33

Percentages in each Category for the Dream Costume

| | Type of Apparel | | | | General Style | | Foot-wear | Accessories |
|---|---|---|---|---|---|---|---|---|
| Group | Long Evening % | Day % | Late Afternoon % | Sport % | Conceal % | Reveal % | % | % |
| N/N | 60.00 | 15.00 | 25.00 | 0.00 | 70.00 | 30.00 | 50.00 | 55.00 |
| F/N | 73.70 | 10.50 | 10.50 | 5.30 | 73.70 | 26.30 | 57.90 | 47.40 |
| N/F | 57.00 | 19.00 | 19.00 | 0.00 | 85.70 | 14.30 | 47.60 | 57.00 |
| F/F | 55.00 | 30.00 | 5.00 | 10.00 | 65.00 | 35.00 | 35.00 | 50.00 |
| n=80 | 61.30 | 20.00 | 15.00 | 3.70 | 74.00 | 26.00 | 47.50 | 52.50 |

## STATISTICAL ANALYSES

### Chi Square

Chi square analysis was used to determine the relationship between each weight group and the position of the drawing on the page, the size of the figure, and the shape of the shoulders for each figure drawn. Table 34 reports that the position of the drawing on the page was independent of the group. The majority of the drawings were on the left side of the page; of the remainder, most were centered but a few were to the right of center.

Table 34

Results of Chi Square Test of Independence Between Grouping and Position of the Drawing on the Page

| Position | Row | Total | Column: Group N/N | F/N | N/F | F/F |
|---|---|---|---|---|---|---|
| Left | 1 | 189 | 49 | 45 | 52 | 43 |
| | Row Percent | | 25.93 | 23.81 | 27.51 | 22.75 |
| | Col Percent | 78.75 | 81.67 | 78.95 | 82.54 | 71.67 |
| Centre & Right | 2 | 51 | 11 | 12 | 11 | 17 |
| | Row Percent | | 21.57 | 23.53 | 21.57 | 33.33 |
| | Col Percent | 21.25 | 18.33 | 21.05 | 17.46 | 28.33 |
| | Total | 240 | 60 | 57 | 63 | 60 |
| | Row Percent | | 25.00 | 23.75 | 26.25 | 25.00 |

The four cells for row 3 [right] were less than 5.0 and, therefore were combined with row 2.

Goodness of fit Chisquare = 2.05
Degrees of freedom = 3
Significance = 0.44

The size of the drawing, as indicated in Table 35, was dependent upon the weight group. The N/N drew tall, large figures; the N/F drew shorter, smaller figures; while the F/F tended to draw average sized or tall, large figures. The F/N group tended not to adhere to any specific size in the drawings.

Table 35

Results of Chi Square Test of Independence Between Grouping and Size of Figure Drawn

| Size | Row | Total | Column: Group N/N | F/N | N/F | F/F |
|---|---|---|---|---|---|---|
| Short Small | 1 | 125 | 26 | 32 | 44 | 23 |
| | Row Percent | | 20.80 | 25.60 | 35.20 | 18.40 |
| | Col Percent | 52.08 | 43.33 | 56.14 | 69.84 | 38.33 |
| Average | 2 | 29 | 7 | 6 | 6 | 10 |
| | Row Percent | | 24.14 | 20.69 | 20.69 | 34.48 |
| | Col Percent | 12.08 | 11.67 | 10.53 | 9.52 | 16.67 |
| Tall Large | 3 | 86 | 27 | 19 | 13 | 27 |
| | Row Percent | | 31.40 | 22.09 | 15.12 | 31.40 |
| | Col Percent | 35.83 | 45.00 | 33.33 | 20.63 | 45.00 |
| | Total | 240 | 60 | 57 | 63 | 60 |
| | Row Percent | | 25.00 | 23.75 | 26.25 | 25.00 |

Goodness of Fit Chisquare = 15.54
Degrees of Freedom = 6
Significance = 0.01

Table 36 reveals that the shape of the shoulder drawn was dependent on the weight group. The F/N and F/F drew more figures with square shoulders than did the other two groups, the N/N and N/F.

Table 36

Results of Chi Square Test of Independence Between Grouping and Shape of Shoulders Drawn

| Shape | Count / Row Percent / Col Percent / Tot Percent | Group N/N | F/N | N/F | F/F | Row Total |
|---|---|---|---|---|---|---|
| Square Shoulders | 1 | 5<br>12.50<br>25.00<br>6.30 | 12<br>30.00<br>63.20<br>15.00 | 9<br>22.50<br>42.90<br>11.20 | 14<br>35.00<br>70.00<br>17.50 | 40<br>50.00 |
| Normal Shoulders | 2 | 8<br>66.70<br>40.00<br>10.00 | 1<br>8.30<br>5.30<br>1.20 | 2<br>16.70<br>9.50<br>2.50 | 1<br>8.30<br>5.00<br>1.20 | 12<br>15.00 |
| Sloping Shoulders | 3 | 7<br>25.00<br>35.00<br>8.70 | 6<br>21.40<br>31.60<br>7.50 | 10<br>35.70<br>47.60<br>12.50 | 5<br>17.90<br>25.00<br>6.30 | 28<br>35.00 |
| Column Total | | 20<br>25.00 | 19<br>23.80 | 21<br>26.30 | 20<br>25.00 | 80<br>100.00 |

Raw Chi Square = 17.849
Degrees of Freedom = 6
Significance = 0.01

Table 28 reveals that the shape of the shoulders drawn is dependent on the weight group. The F/N and F/F drew more figures with square shoulders than did the other two groups, the N/N and N/F.

Analysis of Covariance

In the analysis of covariance, age was treated as a covariate and thus its effect was removed from the analysis. The analysis of covariance indicated significant differences among the groups with respect to percentage body fat, actual weight, percentage standard weight, preference for saturated colour, tint and loose style. In cases of significant F values, the nature of the differences between means was studied using the Newman Keuls method (Winer, 1962, p. 80).

A comparison of the differences among the means revealed that for percentage body fat and actual weight, the F/F and N/F were significantly different from all others. The N/N and the F/N were the only two not significantly different from each other. There was a significant difference among the groups with regard to preference for saturated colour. The F/F group indicated greater preference for saturated colour than the other three groups. Between the F/F and the N/F there was a significant difference in the preference for saturated colour. There was, also, a significant difference among the groups in preference for tint. The N/F indicated the greatest preference for tint, significantly different from that of the F/F. There were significant differences among the four groups in choice of loose style. The F/F expressed greater preference for loose style, this preference being significantly different from both N/N and F/N.

With respect to the D A P variables, two showed significant differences among the groups. The ratio of head area to torso area indicated that the F/N and N/F both drew heads larger in ratio to the area of the torso than was illustrated by the model. The N/N group drew heads smaller in ratio to the torso, while the F/F ratios were almost identical to that of the model. The figure length to head length ratio was significant, with the N/N group drawing the tallest figures. The N/F drew the shortest figures in relation to head length, while the F/N and F/F had almost identical ratios with that of the model.

# Table 37

## Results of Analysis of Covariance with Age as Covariate

| VARIABLE | MEAN (ADJUSTED) | | | | MS.-GRP | MS-WTH | ADJUSTED F | P |
|---|---|---|---|---|---|---|---|---|
| | Group $^{N}/_{N}$ | Group $^{F}/_{N}$ | Group $^{N}/_{F}$ | Group $^{F}/_{F}$ | | | | |
| % Fat | 29.70 | 32.09 | 41.43 | 45.21 | 1090.65 | 28.89 | 37.75 | 0.00 |
| Actual Weight | 129.22 | 141.88 | 171.43 | 188.64 | 1466.11 | 536.87 | 27.31 | 0.00 |
| Sat. | 8.72 | 8.40 | 7.59 | 9.12 | 7.98 | 3.00 | 2.66 | 0.05 |
| Tint | 5.09 | 5.64 | 6.87 | 4.09 | 25.45 | 6.22 | 4.09 | 0.01 |
| Shade | 3.98 | 3.79 | 3.40 | 4.43 | 3.46 | 4.59 | 0.751 | 0.52 |
| Strong | 9.23 | 10.66 | 9.78 | 9.12 | 9.16 | 7.77 | 1.18 | 0.32 |
| Weak | 5.81 | 4.13 | 5.13 | 5.88 | 12.22 | 7.85 | 1.56 | 0.21 |
| Large | 4.66 | 5.72 | 7.06 | 5.09 | 20.56 | 10 88 | 1.89 | 0.14 |
| Small | 9.34 | 8.27 | 6.94 | 8.91 | 20.56 | 10.88 | 1.89 | 0.14 |
| Warm | 6.91 | 9.13 | 6.88 | 8.09 | 22.93 | 14.97 | 1.53 | 0.21 |
| Cool | 9.14 | 6.87 | 9.12 | 7.85 | 23.75 | 14.82 | 1.60 | 0.20 |
| Rough | 8.16 | 5.57 | 8.03 | 7.96 | 29.56 | 16.38 | 1 80 | 0.15 |
| Smooth | 6.84 | 9.43 | 6.92 | 7.04 | 29.98 | 16.45 | 1.82 | 0.15 |
| Loose | 3.54 | 3.60 | 4.46 | 4.99 | 9.79 | 2.48 | 3.94 | 0.01 |
| Reveal | 3.05 | 4.02 | 3.01 | 3.47 | 4.35 | 1.99 | 2.18 | 0.10 |
| Anxiety | 29.55 | 35.89 | 34.27 | 38.41 | 277.36 | 150.39 | 1.84 | 0.10 |
| I-E | 35.31 | 41.26 | 41.24 | 42.64 | 210.35 | 875.55 | 2.39 | 0.0. |
| Barrier | 5.29 | 4.66 | 4.35 | 4.75 | 2.94 | 6.70 | .44 | 0.72 |
| Penetration | 1.88 | 1.06 | 1.27 | 2.22 | 5.39 | 2.01 | 2.63 | 0.06 |
| $^{H}/_{W.W}$[1] | 7.74 | 7.50 | 6.99 | 7.90 | 2.95 | 3.53 | 0.837 | 0.48 |
| Av. W. of T | 9.33 | 8.85 | 8.32 | 9.83 | 7.89 | 4.91 | 1.60 | 0.20 |
| $\frac{\text{Torso}}{\text{Head}}$[2] | 7.44 | 5.36 | 5.56 | 6.24 | 16.44 | 4.57 | 3.59 | 0.02 |
| $\frac{\text{F.L.}}{\text{Head L.}}$[3] | 8.24 | 7.20 | 6.86 | 7.25 | 6.79 | 1.38 | 4.91 | 0.00 |
| Head Area | 40.94 | 48.03 | 39.05 | 49.80 | 550.14 | 536.31 | 1.02 | 0.39 |
| % St. Wt. | 96.92 | 107.01 | 131.45 | 139.49 | 8006.22 | 177.83 | 45.02 | 0.00 |

[1]Height/width at waist
[2]Average width of torso
[3]Figure length/head length

Intercorrelation Analysis

The results of the intercorrelation analysis within each group will be discussed in detail with respect to the variables whose means were significantly different. These variables were; age, percentage body fat, actual weight, preferences for saturated colour, tint, and loose style. Since there were no significant differences among the means for the remaining variables, only the results of the correlation analysis for the total sample will be considered. Tables 39, 40, 41, 42 and 43 show the intercorrelation matrix for all variables in each group; n=80, N/N, F/N, N/F, and F/F respectively. Table 38 is a summary of the significant relationships which will be considered.

There was a positive correlation between age and percentage body fat in all four groups. Age related with externality for both the F/N and F/F. In addition, in the F/N group there was a relationship between age, percentage standard weight and preference for saturated colour. Within the N/F group a relationship existed between age and preference for both fitted and concealing style. Also, there was a positive correlation between age and penetration for this group. In the F/F group, age was related to a preference for weak colour contrast.

Percentage Body Fat

With the exception of the N/F, a positive relationship existed between percentage body fat and both percentage

standard weight and actual weight. In the N/N group, there was a positive relationship between percentage body fat and a preference for saturated colour, large design, rough textured fabric and loose style. This group had the only correlation between percentage body fat and anxiety.

In the F/N group a relationship was found between percentage body fat and saturated colour, percentage body fat and low preference for shade. There existed in the N/F group a relationship between percentage body fat and externality. Percentage body fat was also related to a preference for rough textured fabric, fitted and concealing style of garment. In the F/F group, percentage body fat related positively to a choice of weak colour contrast and concealing style.

Actual Weight

A positive correlation existed between actual weight and percentage body fat in all groups. There was a positive relationship between actual weight and the choice of large design and rough textured fabric in the N/N group, while in the F/N group there existed a positive correlation between actual weight and a preference for small design, saturated colour, and revealing style. There was a relationship existing between actual weight and choice of loose style and large design in the N/F group. On the other hand, in the F/F group, a positive relationship existed between

actual weight and a preference for shade and concealing style of garments.

Saturated Colour

All groups preferred saturated colour to tint; as well, the N/N and F/F groups preferred saturated colour to shade. Saturated colour was associated with anxiety and with percentage standard weight for the F/N. For the N/F group, saturated colour was associated with a choice of warm colour, but in the F/F preference for saturated colour related to a preference for smooth textured fabric.

Tint

Tint, as opposed to shade, was the choice of all four groups. The N/N group showed that for them there was a relationship between the choice of tint and Penetration score. For the F/N group, the choice of tint was related positively to fabrics with small design and a preference for revealing style. In the N/F group, there was a positive relationship between tint and preference for cool colour, smooth textured fabric, and revealing style. Tint was associated with a low Barrier score for the N/F.

Loose Style

In the N/N group, a positive relationship existed between preference for loose style and percentage standard weight. In addition, loose style was associated with concealing

garments for both the N/N and F/N group. But in the latter, preference for loose style proved to have a positive association with anxiety.

For the total group (n=80), shade was associated with internality. A positive relationship existed between strong contrast and a choice of large design and warm colour. There was an association between strong contrast and a low Penetration score. In this group, there existed a positive relationship between weak contrast and a preference for small design and cool colour. In addition, weak contrast was related to both high Barrier and Penetration scores.

Preference for large design correlated positively with a preference for loose style; and conversely, a preference for small design was associated with a preference for fitted garments. The total group preferred warm colour to cool colour. A positive relationship existed between smooth texture and a choice of revealing style, while rough texture was associated with fitted style. Barrier was associated with internality, decreasing percentage standard weight, and Penetration; while anxiety related to both percentage standard weight and externality.

# Table 38
## Summary of Significant Relationships from the Intercorrelation Analysis for all Five Groups

| VARIABLE | n=80 | $N/_N$ | $F/_N$ | $N/_F$ | $F/_F$ |
|---|---|---|---|---|---|
| Age | | | | | |
| | | ↑ Fat$^+$ | ↑ Fat$^+$ | ↑ Fat$^+$ | ↑ Fat$^+$ |
| | | | ↑ St.Wt.$^+$ | | |
| | | | Sat.C.$^+$ | | |
| | | | † Shade$^-$ | | |
| | | | | | Weak C.$^+$ |
| | | | † Large D.$^-$ | | |
| | | | | † Rough T.$^+$ | † Rough T.$^+$ |
| | | | | Loose$^-$ | |
| | | † Reveal$^-$ | | Reveal$^-$ | |
| | | | | | † Anxiety$^-$ |
| | | | I-E$^+$ | | I-E$^+$ |
| | | | | Penet.$^+$ | |
| Percentage Fat | | | | | |
| | | ↑ St. Wt.$^+$ | ↑ St. Wt.$^+$ | | ↑ St. Wt.$^+$ |
| | | Act. Wt.$^+$ | † Act. Wt. | | Act. Wt.$^+$ |
| | | Sat. C.$^+$ | Sat. C.$^+$ | | |
| | | | Shade$^-$ | | |
| | | | | | Weak C.$^+$ |
| | | Large D.$^+$ | | | |
| | | Rough T.$^+$ | | Rough T.$^+$ | |
| | | Loose$^+$ | | Loose$^-$ | |
| | | | | Reveal$^-$ | Reveal$^-$ |
| | | Anxiety$^+$ | | | |
| | | | | I-E$^+$ | |
| | | | † Penet.$^+$ | † Penet.$^+$ | |
| Actual Weight | | | | | |
| | | ↑ St. Wt.$^+$ | ↑ St. Wt.$^+$ | ↑ St Wt.$^+$ | ↑ St. Wt.$^+$ |
| | | | Sat. C.$^+$ | | |
| | | | † Shade$^-$ | | Shade$^+$ |
| | | † Strong$^+$ | | | |
| | | Large D.$^+$ | Small D.$^+$ | Large D.$^+$ | |
| | | | | | † Cool C.$^-$ |
| | | Rough T.$^+$ | | | |
| | | † Loose$^+$ | | Loose$^+$ | |
| | | | Reveal$^+$ | † Reveal$^+$ | Reveal$^+$ |
| | | † I-E$^-$ | † I-E$^+$ | | |
| Saturated Color | | | | | |
| | | | ↑ St. Wt.$^+$ | | |
| | | Tint$^-$ | † Tint$^-$ | Tint$^-$ | Tint$^-$ |
| | | Shade$^-$ | | | Shade$^-$ |
| | | † Large D.$^+$ | | | † Large D.$^+$ |
| | | | † Warm C.$^+$ | Warm C.$^+$ | |
| | | | † Reveal$^-$ | | Rough$^-$ |
| | | | Anxiety$^+$ | | † Loose$^-$ |
| | | † Penet.$^-$ | | † Penet.$^+$ | |

Table 38 continued

Tint

Shade⁻ Shade⁻ Shade⁻ Shade⁻

Small D.⁺ † Small D.⁺

Cool C.⁺

Smooth T.⁺

Reveal⁺ Reveal⁺

Barrier⁻

Penet.⁺

Shade I-E⁻

† Barrier⁺

Strong Contrast

Weak C.⁻

Large D.⁺

Warm C.⁺

† Anxiety⁺

† Barrier⁻

Penet.⁻

Weak Contrast

Small D.⁺

Cool C.⁺

† Anxiety⁻

Barrier⁺

Penet.⁺

Large Design

Small D.⁻

† Warm C.⁺

† Rough T.⁺

Loose⁺

† Reveal⁻

Small Design

† Cool C.⁺

† Smooth T.⁺

Loose⁻

† Reveal⁺

Table 38 continued

| | | | | |
|---|---|---|---|---|
| Warm Color | | | | |
| | Cool C.$^{-}$ | | | |
| Cool Color | | | | |
| Rough Texture | | | | |
| | † ¶ St. Wt.$^{+}$ | | | |
| | Smooth T.$^{-}$ | | | |
| | Reveal$^{-}$ | | | |
| Smooth Texture | | | | |
| | † ¶ St. Wt.$^{-}$ | | | |
| | Reveal$^{+}$ | | | |
| Loose | | | | |
| | ¶ St. Wt.$^{+}$ | ¶ St. Wt.$^{+}$ | | |
| | Reveal$^{-}$ | Reveal$^{-}$ | Reveal$^{-}$ | |
| | | | Anxiety$^{+}$ | |
| | | | † I-E$^{-}$ | |
| Reveal | | | | |
| Anxiety | | | | |
| | ¶ St. Wt.$^{+}$ | | | |
| | I-E$^{+}$ | | | |
| Internal-External | | | | |
| | ¶ St. Wt.$^{+}$ | | | |
| | Barrier$^{-}$ | | | |
| Barrier | | | | |
| | ¶ St. Wt.$^{-}$ | | | |
| | Penet.$^{+}$ | | | |

† Approaching significance.

# Table 39

## Intercorrelation Matrix and Significant Probability Levels for Physical Variables, Clothing Preferences and Psychological Variables for the Total Group (n=80)

| | Physical Variables | | | Compton Fabric Preference Variables | | | | | | | | | | Style | | Psychological Variables | | | Physical | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Chroma | | Contrast | | Design | | Color | | Texture | | | | | | | | |
| | age | % fat | actual weight | saturated | tint | shade | strong | weak | large | small | warm | cool | rough | smooth | loose | reveal | anxiety | I.E. | barrier | penetration | % standard weight |
| Age | 1.00 | .559 .00 | .014 | .051 | .054 | .075 | .250 .01 | .243 .01 | .099 | .099 | .046 | .045 | .013 | .012 | .116 | .315 .00 | .013 | .312 .00 | .099 | .101 | .013 |
| % Fat | | 1.00 | .662 .00 | .048 | .028 | .024 | .178 .06 | .170 .06 | .081 | .081 | .055 | .060 | .204 .03 | .205 .03 | .221 .02 | .290 .00 | .168 .07 | .360 .00 | .099 | .158 .08 | .736 .00 |
| Actual Weight | | | 1.00 | .036 | .074 | .149 .09 | .008 | .010 | .134 | .134 | .032 | .029 | .154 .09 | .157 .08 | .437 .00 | .075 | .165 .07 | .159 .08 | .103 | .032 | .899 .00 |
| Sat. Color | | | | 1.00 | .554 .00 | .155 .08 | .060 | .064 | .129 | .129 | .269 .01 | .266 .01 | .175 .06 | .179 .06 | .021 | .158 .08 | .103 | .163 .07 | .116 | .083 | .013 |
| Tint | | | | | 1.00 | .698 .00 | .067 | .073 | .156 .08 | .156 .08 | .141 | .143 | .200 .04 | .203 .04 | .047 | .143 | .041 | .052 | .195 .04 | .031 | .005 |
| Shade | | | | | | | .007 | .014 | .127 | .127 | .025 | .020 | .128 | .128 | .019 | .075 | .055 | .181 .05 | .170 .07 | .024 | .046 |
| Strong | | | | | | | 1.00 | .992 .00 | .295 .00 | .295 .00 | .359 .00 | .356 .00 | .065 | .065 | .053 | .120 | .150 .09 | .017 | .172 .06 | .291 .00 | .039 |
| Weak | | | | | | | | 1.00 | .307 .00 | .307 .00 | .369 .00 | .367 .00 | .082 | .083 | .040 | .119 | .170 .07 | .070 | .198 .04 | .321 .00 | .043 |
| Large | | | | | | | | | 1.00 | 1.000 .00 | .157 .08 | .153 .09 | .164 .07 | .165 .07 | .187 .05 | .159 .08 | .118 | .057 | .057 | .079 | .109 |
| Small | | | | | | | | | | 1.00 | .157 .08 | .153 .09 | .164 .07 | .165 .07 | .187 .05 | .158 .08 | .118 | .057 | .057 | .079 | .109 |
| Warm | | | | | | | | | | | 1.00 | .999 .00 | .128 | .128 | .023 | .035 | .002 | .048 | .044 | .075 | .092 |
| Cool | | | | | | | | | | | | 1.00 | .126 | .126 | .025 | .014 | .003 | .051 | .037 | .058 | .089 |
| Rough | | | | | | | | | | | | | 1.00 | .999 .00 | .055 | .293 .00 | .031 | .108 | .047 | .016 | .145 .10 |
| Smooth | | | | | | | | | | | | | | 1.00 | .055 | .293 .00 | .034 | .109 | .051 | .014 | .147 .10 |
| Loose | | | | | | | | | | | | | | | 1.00 | .190 .04 | .157 .08 | .043 | .042 | .083 | .412 .00 |
| Reveal | | | | | | | | | | | | | | | | 1.00 | .088 | .133 | .043 | .019 | .074 |
| Anxiety | | | | | | | | | | | | | | | | | 1.00 | .490 .00 | .051 | .101 | .199 .04 |
| I-E | | | | | | | | | | | | | | | | | | 1.00 | .239 .02 | .130 | .219 .03 |
| Barrier | | | | | | | | | | | | | | | | | | | 1.00 | .368 .00 | .181 .05 |
| Penetration | | | | | | | | | | | | | | | | | | | | 1.00 | .055 |

# Table 40

## Intercorrelation Matrix and Significant Probability Levels for Physical Variables, Clothing Preferences and Psychological Variables for N/N

| | Physical Variables | | | Compton Fabric Preference Variables | | | | | | | | | | | Style | | Psychological Variables | | | Physical | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Chroma | | | Contrast | | Design | | Color | | Texture | | | | | | | | |
| | age | % Fat | actual weight | saturated | tint | shade | strong | weak | large | small | warm | cool | rough | smooth | loose | reveal | anxiety | I.E. | barrier | penetration | % standard weight |
| Age | 1.00 | .727 .00 | .114 | .059 | .049 | .064 | .103 | .100 | .190 | .190 | .062 | .075 | .229 | .229 | .239 | .337 | .279 | .054 | .149 | .197 | .119 |
| % Fat | | 1.00 | .497 .01 | .375 .05 | .102 | .129 | .017 | .029 | .574 .00 | .574 .00 | .237 | .243 | .481 .02 | .481 .02 | .521 .01 | .286 | .396 .04 | .063 | .069 | .103 | .627 .00 |
| Actual Weight | | | 1.00 | .139 | .108 | .080 | .364 .06 | .361 .06 | .595 .00 | .595 .00 | .252 | .243 | .389 .04 | .389 .04 | .347 .07 | .211 | .291 | .318 .09 | .149 | .215 | .778 .00 |
| Sat. Color | | | | 1.00 | .499 .01 | .419 .03 | .010 | .047 | .351 .06 | .351 .06 | .167 | .165 | .242 | .242 | .208 | .183 | .281 | .299 | .010 | .343 .07 | .286 |
| Tint | | | | | 1.00 | .541 .01 | .059 | .058 | .016 | .016 | .120 | .108 | .109 | .109 | .243 | .283 | .133 | .076 | .164 | .379 .05 | .053 |
| Shade | | | | | | 1.00 | .121 | .154 | .230 | .230 | .242 | .230 | .029 | .029 | .318 .09 | .341 .07 | .129 | .351 .06 | .143 | .085 | .094 |
| Strong | | | | | | | 1.00 | .998 .00 | .354 .06 | .354 .06 | .499 .01 | .485 .01 | .245 | .245 | .143 | .324 .08 | .115 | .058 | .222 | .230 | .312 .09 |
| Weak | | | | | | | | 1.00 | .361 .06 | .361 .06 | .505 .01 | .491 .01 | .219 | .219 | .137 | .317 .09 | .109 | .042 | .247 | .260 | .316 .09 |
| Large | | | | | | | | | 1.00 | 1.00 .00 | .323 .08 | .314 .09 | .510 .01 | .510 .01 | .588 .00 | .258 | .162 | .126 | .104 | .120 | .574 .00 |
| Small | | | | | | | | | | 1.00 | .323 .08 | .314 .09 | .510 .01 | .510 .01 | .588 .00 | .258 | .163 | .126 | .104 | .120 | .574 .00 |
| Warm | | | | | | | | | | | 1.00 | .998 .00 | .207 | .207 | .231 | .004 | .216 | .253 | .149 | .262 | .427 .03 |
| Cool | | | | | | | | | | | | 1.00 | .204 | .204 | .222 | .013 | .218 | .231 | .138 | .255 | .423 .03 |
| Rough | | | | | | | | | | | | | 1.00 | 1.00 .00 | .162 | .293 | .027 | .186 | .246 | .086 | .240 |
| Smooth | | | | | | | | | | | | | | 1.00 | .163 | .293 | .027 | .186 | .246 | .086 | .240 |
| Loose | | | | | | | | | | | | | | | 1.00 | .425 .03 | .120 | .018 | .151 | .344 .07 | .507 .01 |
| Reveal | | | | | | | | | | | | | | | | 1.00 | .038 | .063 | .030 | .038 | .203 |
| Anxiety | | | | | | | | | | | | | | | | | 1.00 | .648 .00 | .170 | .080 | .255 |
| I-E | | | | | | | | | | | | | | | | | | 1.00 | .131 | .026 | .046 |
| Barrier | | | | | | | | | | | | | | | | | | | 1.00 | .409 .04 | .090 |
| Penetration | | | | | | | | | | | | | | | | | | | | 1.00 | .118 |

# Table 41

## Intercorrelation Matrix and Significant Probability Levels for Physical Variables, Clothing Preferences and Psychological Variables for F/N

| | Physical Variables | | | Compton Fabric Preference Variables | | | | | | | | | | | Style | | Psychological Variables | | | Physical | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Chroma | | | Contrast | | Design | | Color | | Texture | | | | | | | | |
| | age | % Fat | actual weight | saturated | tint | shade | strong | weak | large | small | warm | cool | rough | smooth | loose | reveal | anxiety | I-E | barrier | penetration | % standard weight |
| Age | 1.00 | .729 .00 | .157 | .454 .02 | .173 | .353 .07 | .336 | .272 | .386 .07 | .316 .07 | .191 | .191 | .127 | .127 | .104 | .294 | .295 | .397 .05 | .023 | .144 | .563 .01 |
| % Fat | | 1.00 | .335 .08 | .741 .00 | .082 | .382 .05 | .067 | .138 | .276 | .276 | .268 | .268 | .083 | .083 | .087 | .198 | .257 | .296 | .062 | .362 .06 | .716 .00 |
| Actual Weight | | | 1.00 | .388 .05 | .212 | .356 .07 | .013 | .021 | .476 .02 | .476 .02 | .023 | .023 | .231 | .231 | .067 | .456 .02 | .074 | .318 .09 | .079 | .038 | .671 .00 |
| Sat. Color | | | | 1.00 | .366 .06 | .052 | .067 | .060 | .066 | .066 | .368 .06 | .368 .06 | .140 | .140 | .026 | .327 .09 | .573 .01 | .163 | .177 | .279 | .586 .00 |
| Tint | | | | | 1.00 | .892 .00 | .089 | .170 | .647 .00 | .647 .00 | .168 | .168 | .031 | .031 | .064 | .485 .02 | .286 | .018 | .016 | .112 | .101 |
| Shade | | | | | | 1.00 | .115 | .208 | .733 .00 | .733 .00 | .085 | .085 | .039 | .039 | .118 | .292 | .032 | .002 | .056 | .226 | .347 .07 |
| Strong | | | | | | | 1.00 | .971 .00 | .251 | .251 | .385 .05 | .385 .05 | .209 | .209 | .127 | .156 | .192 | .281 | .038 | .523 .01 | .113 |
| Weak | | | | | | | | 1.00 | .344 .07 | .344 .07 | .377 .06 | .377 .06 | .118 | .118 | .163 | .187 | .135 | .136 | .413 | .569 .01 | .140 |
| Large | | | | | | | | | 1.00 | 1.00 .00 | .252 | .252 | .122 | .122 | .568 .01 | .085 | .084 | .080 | .104 | .016 | .425 .03 |
| Small | | | | | | | | | | 1.00 | .252 | .252 | .122 | .122 | .568 .01 | .085 | .084 | .080 | .104 | .016 | .425 .03 |
| Warm | | | | | | | | | | | 1.00 | 1.00 .00 | .380 .05 | .380 .05 | .391 .05 | .065 | .063 | .096 | .249 | .039 | .083 |
| Cool | | | | | | | | | | | | 1.00 | .380 .05 | .380 .05 | .391 .05 | .065 | .063 | .096 | .249 | .039 | .083 |
| Rough | | | | | | | | | | | | | 1.00 | 1.00 .00 | .109 | .143 | .581 .05 | .399 .04 | .198 | .130 | .163 |
| Smooth | | | | | | | | | | | | | | 1.00 | .109 | .143 | .381 .05 | .399 .04 | .198 | .130 | .163 |
| Loose | | | | | | | | | | | | | | | 1.00 | .429 .03 | .418 .04 | .050 | .115 | .289 | .019 |
| Reveal | | | | | | | | | | | | | | | | 1.00 | .491 .02 | .149 | .093 | .063 | .072 |
| Anxiety | | | | | | | | | | | | | | | | | 1.00 | .794 | .077 | .135 | .139 |
| I-E | | | | | | | | | | | | | | | | | | 1.00 | .359 .01 | .274 | .384 .05 |
| Barrier | | | | | | | | | | | | | | | | | | | 1.00 | .334 .08 | .247 |
| Penetration | | | | | | | | | | | | | | | | | | | | 1.00 | .232 |

# Table 42

## Intercorrelation Matrix and Significant Probability Levels for Physical Variables, Clothing Preferences and Psychological Variables for N/F

| | Physical Variables | | | Compton Fabric Preference Variables | | | | | | | | | | Style | | Psychological Variables | | | | Physical |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Chroma | | Contrast | | Design | | Color | | Texture | | | | | | | | |
| | age | % Fat | actual weight | saturated | tint | shade | strong | weak | large | small | warm | cool | rough | smooth | loose | reveal | anxiety | I-E | barrier | penetration | % standard weight |
| Age | 1.00 | .721 .00 | .269 | .029 | .146 | .148 | .201 | .161 | .172 | .172 | .117 | .117 | .326 .07 | .325 .07 | .507 .01 | .480 .01 | .023 | .234 | .095 | .481 .01 | .192 |
| % Fat | | 1.00 | .165 | .048 | .102 | .192 | .028 | .010 | .083 | .098 | .165 | .165 | .498 .01 | .496 .01 | .415 .03 | .448 .02 | .005 | .393 .04 | .063 | .307 .09 | .289 |
| Actual Weight | | | 1.00 | .176 | .049 | .170 | .002 | .019 | .412 .03 | .412 .03 | .000 | .000 | .224 | .233 | .531 .01 | .296 .10 | .038 | .103 | .025 | .011 | .796 .00 |
| Sat. Color | | | | 1.00 | .638 .00 | .084 | .256 | .262 | .153 | .153 | .434 .02 | .434 .02 | .132 | .149 | .131 | .248 | .178 | .090 | .134 | .308 .09 | .182 |
| Tint | | | | | 1.00 | .706 .00 | .210 | .210 | .306 .09 | .306 .09 | .504 .01 | .504 .01 | .495 .01 | .506 .01 | .021 | .439 .02 | .072 | .095 | .443 .02 | .102 | .241 |
| Shade | | | | | | 1.00 | .022 | .007 | .245 | .245 | .285 | .285 | .549 .00 | .549 .00 | .170 | .339 .07 | .052 | .121 | .425 | .119 | .078 |
| Strong | | | | | | | 1.00 | .344 .00 | .209 | .209 | .058 | .058 | .080 | .078 | .157 | .141 | .081 | .366 .05 | .156 | .069 | .191 |
| Weak | | | | | | | | 1.00 | .162 | .162 | .076 | .076 | .082 | .079 | .170 | .201 | .131 | .431 .03 | .168 | .056 | .218 |
| Large | | | | | | | | | 1.00 | 1.00 .00 | .126 | .126 | .101 | .101 | .379 .04 | .196 | .209 | .353 .06 | .074 | .066 | .183 |
| Small | | | | | | | | | | 1.00 | .126 | .126 | .101 | .101 | .379 .04 | .196 | .209 | .353 .06 | .074 | .066 | .183 |
| Warm | | | | | | | | | | | 1.00 | 1.00 .00 | .194 | .196 | .104 | .109 | .044 | .164 | .040 | .280 | .092 |
| Cool | | | | | | | | | | | | 1.00 | .194 | .196 | .104 | .109 | .044 | .164 | .040 | .280 | .092 |
| Rough | | | | | | | | | | | | | 1.00 | .999 .00 | .119 | .370 .05 | .149 | .176 | .105 | .112 | .225 |
| Smooth | | | | | | | | | | | | | | 1.00 | .121 | .356 .05 | .160 | .170 | .080 | .107 | .225 |
| Loose | | | | | | | | | | | | | | | 1.00 | .218 | .110 | .342 .06 | .093 | .049 | .258 |
| Reveal | | | | | | | | | | | | | | | | 1.00 | .265 | .674 .00 | .155 | .143 | .341 .06 |
| Anxiety | | | | | | | | | | | | | | | | | 1.00 | .453 .02 | .214 | .310 .09 | .178 |
| I-E | | | | | | | | | | | | | | | | | | 1.00 | .315 .04 | .053 | .132 |
| Barrier | | | | | | | | | | | | | | | | | | | 1.00 | .096 | .081 |
| Penetration | | | | | | | | | | | | | | | | | | | | 1.00 | .010 |

# Table 43

## Intercorrelation Matrix and Significant Probability Levels for Physical Variables, Clothing Preferences and Psychological Variables for F/F

| | Physical Variables | | | Compton Fabric Preference Variables | | | | | | | | | | Style | | Psychological Variables | | | | Physical |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Chroma | | | Contrast | | Design | | Color | | Texture | | | | | | | |
| | Age | % Fat | actual weight | saturated | tint | shade | strong | weak | large | small | warm | cool | rough | smooth | loose | reveal | anxiety | I-E | barrier | penetration | % standard weight |
| Age | 1.00 | .654 .00 | .045 | .113 | .067 | .113 | .536 .01 | .536 .01 | .270 | .270 | .141 | .159 | .359 .06 | .359 .06 | .244 | .207 | .357 .06 | .367 .06 | .106 | .042 | .161 |
| % Fat | | 1.00 | .459 .02 | .001 | .182 | .280 | .470 .02 | .470 .02 | .155 | .163 | .181 | .192 | .043 | .043 | .097 | .432 -.03 | .159 | .767 | .060 | .041 | .454 .02 |
| Actual Weight | | | 1.00 | .141 | .258 | .466 .02 | .031 | .031 | .084 | .084 | .291 | .304 .10 | .092 | .092 | .143 | .471 -.02 | .053 | .018 | .044 | .098 | .816 .00 |
| Sat. Color | | | | 1.00 | .418 .04 | .413 .03 | .016 | .016 | .329 .08 | .329 .08 | .135 | .121 | .371 .05 | .371 .05 | .308 .10 | .263 | .059 | .124 | .131 | .046 | .027 |
| Tint | | | | | 1.00 | .532 .01 | .069 | .069 | .080 | .080 | .186 | .204 | .134 | .134 | .169 | .281 | .207 | .243 | .156 | .156 | .197 |
| Shade | | | | | | 1.00 | .031 | .031 | .236 | .236 | .329 .08 | .333 .08 | .075 | .075 | .273 | .159 | .227 | .365 .06 | .187 | .386 .05 | .341 .07 |
| Strong | | | | | | | 1.00 | 1.00 .00 | .415 .03 | .415 .03 | .381 .05 | .387 .05 | .056 | .056 | .591 .00 | .061 | .419 .03 | .039 | .201 | .293 | .145 |
| Weak | | | | | | | | 1.00 | .415 .03 | .415 .03 | .381 .05 | .387 .05 | .056 | .056 | .591 .00 | .061 | .419 .03 | .039 | .201 | .293 | .145 |
| Large | | | | | | | | | 1.00 | 1.00 .00 | .290 | .283 | .213 | .213 | .141 | .369 .05 | .454 .02 | .143 | .027 | .347 .07 | .070 |
| Small | | | | | | | | | | 1.00 | .290 | .283 | .213 | .213 | .141 | .369 .05 | .454 .02 | .143 | .027 | .347 .07 | .070 |
| Warm | | | | | | | | | | | 1.00 | .998 .00 | .010 | .010 | .325 .08 | .094 | .049 | .192 | .108 | .178 | .126 |
| Cool | | | | | | | | | | | | 1.00 | .003 | .003 | .345 .07 | .072 | .062 | .192 | .099 | .164 | .121 |
| Rough | | | | | | | | | | | | | 1.00 | 1.00 .00 | .098 | .201 | .261 | .078 | .419 .03 | .016 | .120 |
| Smooth | | | | | | | | | | | | | | 1.00 | .069 | .201 | .261 | .078 | .419 .03 | .016 | .119 |
| Loose | | | | | | | | | | | | | | | 1.00 | .082 | .111 | .004 | .003 | .027 | .236 |
| Reveal | | | | | | | | | | | | | | | | 1.00 | .078 | .085 | .021 | .054 | .315 .09 |
| Anxiety | | | | | | | | | | | | | | | | | 1.00 | .501 .01 | .124 | .175 | .114 |
| I-E | | | | | | | | | | | | | | | | | | 1.00 | .313 .09 | .163 | .085 |
| Barrier | | | | | | | | | | | | | | | | | | | 1.00 | .607 .00 | .310 .09 |
| Penetration | | | | | | | | | | | | | | | | | | | | 1.00 | .165 |

## Results of Null Hypotheses

I. There will be no significant differences among the overall mean scores (adjusted to remove the effect of age) for the four weight groups with respect to the following categories of variables:

A. The Physical Variables

B. The Clothing Variables

C. The Psychological Variables

D. The Draw A Person Variables

A significant difference was found among the overall means scores for the four weight groups with respect to the following variables: percentage body fat, actual weight, percentage standard weight, saturated colour, tint, loose style, and proportion of figure length to head length. The null hypotheses, therefore, for these specific variables were rejected. All other hypotheses failed to be rejected.

Significant differences among the four groups in the means of the specific variables justify further analysis of these variables for each group. On the other hand, the lack of significant differences among the groups in other variables suggested that the four groups were homogeneous in regard to these and should be treated as a single group (n=80). Hypotheses II.a. deals with the former and hypotheses II.b. with the latter.

II.a. For the variables whose means were significantly

different among the four groups, the following statistical test treated them as four separate groups. There will be no significant intercorrelations among the variables for each of the four groups. Significant intercorrelations were found among the following variables for each of the four groups. The null hypotheses were, therefore, rejected for the following:

For N/N

Age and: percentage body fat.

Percentage body fat and: percentage standard weight, actual weight, saturated colour, large design, rough texture, loose style, and anxiety.

Actual weight and: percentage standard weight, large design, and rough texture.

Saturated colour: low preference for both tint and shade.

Tint and: Penetration and low preference for shade.

Loose style and: percentage standard weight and concealing style.

For F/N

Age and: percentage body fat, percentage standard weight, saturated colour, and externality.

Percentage body fat and: percentage standard weight, saturated colour, and low preference for shade.

Actual weight and: percentage standard weight, saturated colour, small design, and revealing style.

Saturated colour and: percentage standard weight and anxiety.

Tint and: small design, revealing style, and low preference for shade.

Loose style and: concealing style and anxiety.

For N/F

Age and: percentage body fat, fitted style, concealing style, and Penetration.

Percentage body fat and: rough texture, fitted style, concealing style, and externality.

Actual weight and: percentage standard weight, large design, and loose style.

Saturated colour and: warm colour and low preference for tint.

Tint and: cool colour, smooth texture, revealing style style, low Barrier, and low preference for shade.

For F/F

Age and: percentage body fat, weak contrast, and externality.

Percentage body fat and: percentage standard weight, actual weight, weak contrast, and concealing style.

Actual weight and: percentage standard weight, shade, and concealing style.

Saturated colour and: smooth texture and low preference for both tint and shade.

Tint and: low preference for shade.

All other hypotheses failed to be rejected.

II.b. For the variables which were not significantly different among the four groups, the following statistical test treated them as a total group (n=80). Significant correlations were found for the total sample; therefore, the null hypotheses for these variables were rejected. All other hypotheses failed to be rejected.

For n=80

Shade and: internality.

Strong contrast and: large design, warm colour, low Penetration, and low preference for weak contrast.

Weak Contrast and: small design, cool colour, Barrier and Penetration.

Large design and: loose style, and low preference for small design.

Small design and: fitted style.

Warm colour and: low preference for cool colour.

Rough texture and: concealing style and low preference for smooth texture.

Smooth texture and: revealing style.

Anxiety and: percentage standard weight and externality.

I-E and: percentage standard weight and low Barrier.

Barrier and: Penetration and decreasing percentage standard weight.

All other hypotheses failed to be rejected.

# CHAPTER V

## INTERPRETATION

Fisher and Cleveland's work on Body Image Boundary provided the theoretical framework for this study. The interpretation of the results will be discussed in relation to the theoretical framework, the objectives for the study, and the hypotheses formulated.

The first objective was to establish if women of different weight histories and current weight differed significantly from one another on psychological, physical and clothing variables. There were differences among the groups, but as well there were several similarities. The first similarity was that as age increased so did percentage body fat (as measured by the skinfold technique) for all groups. This substantiated Young's (1963) finding that as age increases, the body retains more fat (decreases in density) even though the weight remains normal. Furthermore, this study showed that percentage body fat increased with age even though the individual was already obese. Young suggested that as age increased the fat became more central and less subcutaneous, while Mayer (1968) believed that protein was replaced by fat.

Secondly, no direct relationship was found between age and actual weight. Burnight and Marden (1973) found that obesity, as measured by scale weight, increased with age.

The results of this study do not lend support to this finding.

Thirdly, the increase in actual weight, with a corresponding increase in percentage standard weight, was to be expected because actual weight was used in the calculation of percentage standard weight.

The fourth similarity was related to colour preferences. According to the results of the descriptive analyses, the means for saturated colour were higher than the mean scores for tint. As well, all groups had higher scores for strong colour contrast than weak contrast. Fashion may have influenced these choices, since bright colour contrasts were in vogue at the time this study was begun. These findings, however, substantiate Compton's (1963) studies which showed that Utah homemakers also had a greater preference for saturated colour than for either tint or shade, and that both the Idaho and Utah homemakers preferred strong to weak colour contrast. The fact that Compton's (1963) Idaho homemakers preferred tint to either saturated colour or shade may indicate that geographical location could have affected the choice of colour. Further research is needed to confirm these findings.

Statistically, significant differences were found among the groups with respect to other variables. With regard to percentage body fat and actual weight, the F/F and the N/F differed significantly from the other two groups for these

variables. This could be expected since actual weight was the criterion upon which the groups were chosen. In addition, with the exception of the N/F, percentage body fat increased with a corresponding increase in both actual weight and percentage standard weight. The N/F became obese after 20 years of age, thus the question of deposition of fat for this group becomes relevant. Is the fat layered subcutaneously where more of the excess can be measured, or is it stored around the body organs where it cannot be measured? Young (1963) suggested that as age increased the body fat may be deposited internally rather than subcutaneously and since for the N/F groups, the mean age is slightly higher than for the other groups, this may account for the difference. In any case, the skinfold measurement for the N/F did not relate to actual weight and percentage standard weight as it did for the other three groups.

The descriptive analysis showed that although there were overall preferences for all groups regarding colour and fabric choices, there were, as well, differences among the groups with regard to specific preferences. The following hypotheses are pure conjecture, in that they are based on hints derived from a few available studies of colour and personality traits.

Compton (1962) found that women who preferred small design were particularly feminine and interested in making a good impression, and that those who chose saturated colour

were more sociable and less submissive. In this study, the N/N chose small design most often. Does the possibility exist that they may feel more feminine and may concentrate on making a good impression? As well, because the F/F indicated the greatest preference for saturated colour, were those who have always been obese more sociable and less submissive? On the other hand since the N/F chose tint and large design, could it be hypothesized that they feel less feminine, were less interested in making a good impression, were more submissive, and less sociable than the other groups?

Sears (1966) found a relationship between preference for warm colour and socialization, and between strong figure ground contrast and dominance. The F/N showed the greatest preference for strong contrast and for warm colour. Is there a relationship between preference for warm colour and sociability, strong contrasting colour and dominance?

The choice of rough texture and loose style by both the N/F and the F/F suggests that they may be attempting to reduce the apparent size of the body by using rough textured fabric while at the same time hiding the body configuration with a loose style. According to Fisher and Cleveland (1965) the body is both part of the perceiver and part of that being perceived by others. If the obese woman perceives herself as 'ugly and misshapen' and also feels that others perceive her as ugly and misshapen, then the attempt to hide the body becomes a reasonable hypothesis. Further study using similar

groups and variables may shed light on these hypotheses.

The second objective was to detect patterns of relationships among the psychological, physical, and clothing variables. Specific patterns have evolved with respect to the interrelationship of variables. No one group resembled another in these patterns.

In the statistical analysis, the N/N (the control group) had no specific preferences which related to increasing age. Since weight remained normal, it is suggested that they continued to choose style and colour which are dictated by current fashion. On the other hand, when there was an increase in percentage body fat, they showed an increased preference for saturated colour, large design, rough texture, and loose style. Fisher (1973) suggests that even moderate degrees of obesity are considered disfiguring, and this may be particularly true for the group of normal weight. The desire to hide body change would be reflected in the choice of loose clothing, while rough textured fabric does not increase the apparent size of the body. Since Compton's (1962) findings indicated a relationship between saturated colour and greater sociability, and less submissiveness, can we hypothesize that the N/N, therefore, may be attempting, when there is an increase in percentage body fat, to retain their social acceptability and yet indicate that they are not submissive in these circumstances? This same group, the N/N, showed also an increasing preference for

loose style and for concealing garments as percentage standard weight increased.

Fisher (1973) stated that the body appearance advertises the woman's status in the world of love, sex, and appeal to men. Women, therefore, would resort to camouflage to hide any change in body configuration or change in actual weight which can be read on a bathroom scale. This may be true for the F/N as well as the N/N. The F/N who have maintained normal weight for at least two years also had an increased preference for saturated colour when there was an increase in percentage body fat. In addition, the preference for saturated colour increased with a corresponding increase in age. For the F/N only, this is contrary to Fisher's (1973) statement that there is a decreasing preference for bright saturated colour with increasing age. No other group indicated this preference. As with the N/N, perhaps this group also seeks to remain socially acceptable, even though the percentage body fat has increased.

The F/N showed that with an increase in actual weight there was a corresponding increase in preference for small design and revealing style. There was, apparently, no attempt to hide the body contours. Revealing style would give exposure to certain parts of the body or outline the entire body. It must be remembered, however, that this group has remained in the normal weight range and therefore instead of camouflaging slight changes in the body contours,

as the N/N may choose to do, the F/N may choose to continue to wear revealing clothes. They are, after all, slim and acceptable, when compared to their former weight. For the F/N, when the preference for tint increased there is again the increased preference for revealing style and small design. Compton's (1962, 1963) findings showed that there are relationships between small designs in fabric and femininity, as well as a relationship between large weight/height ratios and small design. The choice of small design may be an attempt to be more feminine or it may be a reflection of a former choice of fabric design, a design chosen when weight/height ratios were much greater than at present. That is, they may still feel fat and choose fabric design in accordance with a former, more familiar body image.

The N/F were the opposite of the F/N in their choice of garments. The N/F showed an increase in preference for fitted and concealing garments with increasing percentage body fat and increasing age. This substantiates Fisher's (1973) theory that there is a need to feel a greater compactness, which confines the large body, and yet conceals the undesirable and socially unacceptable body. Fitted style tends to reduce the bulkiness of some fabrics, while the choice of rough textured fabric reduces the apparent body size. Also, for the N/F there is an increasing preference for loose style which accompanies a rise in actual scales weight. As well as acting as a camouflage,

loose styles may be cooler and more physically comfortable for the person who has become obese. Added to this is the fact that there is a limited supply of suitable garments in large sizes and the choice of a loose style helps to eliminate the problem of proper fit in a garment. For the N/F, no colour preference appears to be related to age, percentage body fat or actual weight. Where there was a preference for saturated colour it was associated with the choice of warm colour. Humphris (1968) and Sears (1966) found that warm colour is related to socialization. In the choice of warm colour we may theorize that this obese group (N/F) was attempting to be more socially oriented even though, according to Fisher (1973) they may feel 'ugly, misshapen and unworthy.'

The greatest preference for tint, as expressed by the N/F, is associated with the preference for cool colour, smooth texture and revealing style. This choice is contrary to their other choices in that revealing style exposes or outlines the body; and smooth texture increases the apparent body size because it reflects light. Here again, however, the former body image may be operative, indicating that they may not realixe the full extent of body change that has taken place. Bruck (1973) explains that obese individuals do not see themselves as thinner even after a weight reduction of considerable proportions and that the body image changes more slowly than the actual body dimensions.

Throughout this study there was evidence that the N/F group was unique in many respects. Further research regarding this group may produce some enlightening results.

The F/F showed fewer distinct patterns than the F/N or N/F. They, like the N/N, may be accustomed to their size and therefore, with their body image, and are more consistent in their choices of colour, fabric and style. With increasing age there is an increasing preference for weak contrast, which is in agreement with Fisher's (1973) statement that there is a decreasing preference for bright saturated colour as age increases. In addition, the increase in preference for weak contrast corresponds to the increase in percentage body fat. Since Sears (1966) found that weak figure ground contrast was related to femininity, the obese may be attempting to feel feminine in spite of their size. With an increase in actual weight, there was a preference for concealing style to cover the body bulk; and for shade to blend with the surroundings. On the other hand as the preference for saturated colour increased there was an accompanying preference for smooth fabric which may make the body appear larger with well defined outlines.

There were, also, differences among the groups with respect to the psychological variables. To be externally controlled is to believe that one is powerless to control the factors which affect one's life. The F/N and the F/F

became more external as percentage body fat increased. Gormanous and Lowe (1975) who tested normal and obese persons for externality, concluded that obese persons could not be distinguished from persons of normal weight. The finding for the N/F group therefore is contrary to that of Gormanous and Lowe. The question is, did obesity occur because of externality, or did they become externally orientated because of their obesity? It must be noted that the descriptive analysis indicated that the control group (N/N) was more internally orientated than the groups who are, or have been, obese.

For the N/N, an increase in percentage fat was directly associated with an increase in the anxiety level. The N/N was the only group indicating this relationship. Is increased anxiety the cause of, or conversely, the result of, the increase in percentage body fat? According to Young (1963) an increase in percentage body fat means that the body becomes less dense, or fatter, but actual scale weight remains normal. There may be a change in body contour if not in actual weight. This possible change may increase the level of anxiety in the individual who has been of normal weight throughout life. Holt and Winick (1973) say that anxiety is caused by the self image rather than by reality. This statement may tend to support the idea that a change in body contour would distort the body image and thus cause anxiety.

In the F/N group a rise in the anxiety level was associated with an increased preference for saturated colour. This substantiates Caddel's (1967) finding that anxious personalities chose intensified colour, but it appears to be contrary to Compton's (1967) study which indicated that anxious individuals preferred weak figure ground contrast. Increased anxiety is related also to an increased preference for loose style. Perhaps in camouflaging the body the individual is coping with the increased anxiety.

For the N/F, low Barrier or weak body boundaries were related to a preference for tint. This would appear to conflict with Compton's (1964) findings that low Barrier, psychotic women chose saturated color. A tint, however, may be an intense colour and therefore this study may lend support to, rather than contradict, Compton's study. Tint, for the N/N, relates to Penetration. As vulnerability increases, therefore, the preference for tint increases.

There were no relationships between either Barrier or Penetration and preferences for colours except in the case of tint. For the N/N the higher the Penetration the higher the preference for tint, while for the N/F, low Barrier was associated with an increased preference for tint.

With increasing age, the N/F showed an increase in Penetration of body boundaries. Thus those who became obese tended to feel more vulnerable with increasing age.

In accordance with hypothesis II.b., the following

interpretations pertain to the total group, n = 80.

Shade is directly associated with Internality (the belief that most events in life can be regulated by skills or personal attributes). Compton (1962) found that women who prefer shade are less submissive, while Rotter (1971) concluded that internally orientated individuals tend to resist manipulation. If being less submissive is interpreted as being able to resist manipulation; then it appears reasonable to assume that those who prefer shade characterize internally controlled individuals. Fleming (1968), in a study of young women with physical disabilities, found that high Barrier subjects indicated a preference for shade. Since Megargee (1965) suggested that high Barrier scores were associated with adaptive behaviour, Fleming interpreted this association as meaning that a well adjusted girl would choose the colour of fabric which would deemphasize her disability. For the total group (n = 80), shade did not reach significance ($p. < .07$) in its relationship with Barrier, but this may suggest that those who cope best with a situation prefer shades.

Several patterns have emerged for the total group regarding the interrelationships of colour, design and style. These overall patterns which have emerged, while they appear logical, have not been substantiated by other research. Strong colour contrast relates to large design and to warm colour, while weak contrast is associated with cool colour

and with small design. In addition, large design in fabric is associated with a loose style in clothing, but small design is related to more fitted garments. A direct association between texture and style has also been discerned. A preference for rough texture is related to a preference for concealing garments, and, conversely, smooth texture for revealing styles.

Joe (1971) suggested that externals describe themselves as anxious, less able to cope with frustration, and more concerned with failure than with achievement. Patton and Frietag (1977) found that if an individual is externally controlled she is more likely to be anxious. This study substantiates these findings since anxiety is directly related to externality. There is a direct relationship as well between anxiety and percentage standard weight, but there is no evidence to indicate whether anxiety is the cause or the effect. No studies have been found to substantiate the findings of this research which link weak body boundaries and externality, or conversely, internality and high Barrier score (strong body boundaries). In this study strong body boundary, however, is directly related to a decrease in percentage standard weight. Barrier also shows a direct relationship with Penetration. This substantiates studies by Kernaleguen (1970), Baer (1970) and Dowdeswell (1972), who found a high correlation between Barrier and Penetration. This may be explained in two ways.

First, the high correlation between Barrier and Penetration suggests that these variables are measuring the same thing. Secondly, Fisher and Cleveland's (1968) theory implies that this relationship between Barrier and Penetration is characteristic of an individual with strong body boundaries who is vulnerable in such a way that it enables her to be empathic. The women in this group, as well as those in the other studies mentioned, may have empathy for others.

In order to further study the effect of body image with regard to obese and non-obese women, D A P techniques were employed. Kotkov and Goodman (1953) theorize that an obese woman will express her variation from normal weight through her perception of the female figure image. They suggest that four of six signs will serve to identify obesity. Their theory has been substantiated by the findings of this study. Of the two obese groups, the N/F drew the widest waists in proportion to the height of the figure; the shortest figures, with respect to the ratio of head length to figure length; the shortest figures with regard to figure size; and the largest head area compared to torso area. The other obese group, the F/F, drew the greatest horizontal area covered by the torso; the largest heads by area covered; and the greatest number of square shoulders. There is, therefore, a difference between the two obese groups with regard to body image. This may relate to the age of onset of obesity. No indication of age of onset of

obesity was reported by Kotkov and Goodman in their study; only that four of six signs serve to identify obesity in women.

There was evidence in the F/N group to support Bruch's (1973) theory that obese individuals will not see themselves as thinner even after a considerable weight loss. There was evidence that the F/N, although now thin, indicated through their drawings that they still saw themselves as obese because the heads they drew were the largest in relationship to the size of the torso; and they drew, also, heads which were large in area. In addition, they drew more square shoulders than either the N/N or the N/F.

There are indications too, that the N/F do not see themselves as obese. They drew smaller waists, the most sloping shoulders, and the actual head size drawn related closely to that of the normal group. The Chi Square analysis showed that the F/N had a fairly even distribution of tall, average and small sized figures. This may suggest that in future D A P research involving obese individuals, recording the onset of obesity may be justified.

Berman and Laffel (1953) found that there was a relationship between body type and the figure drawn. This study lends support to this theory with regard to figure proportion. The N/N who were the tallest group, drew the tallest figures; the N/F who were the shortest group drew the shortest figures; while the F/N and F/F who were identi-

cal in mean height, drew figures in direct relationship to their height.

Hammer (1967) suggests that the position of the figure on the page corresponds to where a person places herself in the environment. Since the majority of the drawings were to the left of centre it would indicate, according to Hammer, that most of the women in this study are self-centred. All of the groups are concerned with loss of weight or maintaining weight and, therefore, it is possible that they would tend to be self-centred in this respect.

The dream costume was a psychological exercise in which the women were asked to imagine a costume they would like to own. This exercise proved to be very difficult for many of the women. Perhaps their body image is not well enough defined to allow them to imagine a costume for the body. On the other hand, perhaps clothes and dressing fashionably is not part of their general interest, or they have lost interest because affordable or suitable wearing apparel for their particular weight is not available. The possibility also exists that subjects have attained their goal and consequently cannot readily visualize a dream costume.

The majority of women chose the evening gown or gown with cape, which is the least practical and most expensive garment a woman can own. Fisher (1973) says that when Cinderella went to the ball she was disguised as an elegant, high status figure. Is the evening gown a status symbol

which suggests the desire for increased status? All costumes were luxuries in one sense or another as they implied fine workmanship, expensive fabrics or jewels. Whatever the costume chosen, it would appear to imply a desire to increase social status through the use of clothing. The F/N, who, until their reduction in weight may have been deprived of the pleasure of successfully wearing an evening gown, chose that costume most often. The F/F, perhaps despairing of ever being able to wear an evening gown effectively, chose that costume slightly more than 50 percent of the time.

It is interesting that, of the total group, 70 percent chose costumes whose general appearance was concealing. Even though they may have described a semi-revealing dress or gown it was usually covered with a long cape or loose fitting jacket.

This total sample appeared to think only in terms of dress and not in terms of a complete costume. Since less than half mentioned shoes, they may not consider them as part of the costume, or they may prefer to forget about their feet and legs if they consider them unacceptable according to our beauty standards. Where shoes were mentioned, they were almost always described in detail as to colour and style. The failure to accessorize a costume may mean that, again, individuals think only of the garment and not the total costume. Accessories, when mentioned, were usually described in detail. This supports the common ac-

cusation that American women do not think in terms of total costume where clothing selection is concerned.

The findings of this study have mildly supported the theoretical framework and objectives of the research. Each of the four groups was in many ways unique in the way it perceived the body in relation to psychological, physical and clothing variables. No two groups were the same. The way a woman viewed her control over destiny and experienced her body boundaries was related to specific psychological and clothing variables.

# CHAPTER VI

# SUMMARY AND RECOMMENDATIONS

## Summary

The purpose of this exploratory research was to establish if women of different weight histories and current weight differ significantly from each other with regards to psychological, physical and clothing variables. The theoretical framework was based largely on Fisher and Cleveland's theory that obese individuals, because of a noticeable deviation from the cultural standard of body size, may perceive themselves and others differently than the individual whose body measurements closely conform to that of the ideal body size. This difference in turn may relate to psychological variation and a difference in clothing preference.

Four groups of women were selected on the basis of actual weight, weight histories and age. If obesity occured during childhood or adolescence, and if these women were still obese, they were placed in the F/F group, while if they became overweight or obese after 20 years of age they were placed in the N/F group. The women in the F/N group had to have been overweight or obese and to have reached ideal weight or the desirable weight prescribed by their physicians, and to have maintained that weight for a minimum of two years. Women in the N/N or control group were to have maintained normal weight throughout life, with the exceptions of pregnancy or illness which may have effected a

temporary change in weight.

The selected variables were actual weight, percentage body fat as determined by the skinfold technique, percentage standard weight, locus of control, anxiety, Barrier and Penetration, body image, fabric and style preference, and a dream costume. These tests were administered in one session of approximately two hours in length. The testing was completed in August and December of 1974 in Edmonton and Calgary, Alberta. Statistical analysis was done at the University of Alberta Computing Centre.

The results showed differences and similarities among the four groups. For the variables where there were no significant differences among the means for the four groups, the total group was treated as one (n = 80).

The first similarity among the groups was that as age increased so did percentage body fat. Secondly, no direct relationship was found between age and actual weight. The four groups expressed greater preference for saturated colour and strong colour contrast than for tint, shade and weak colour contrast.

Differences were found with respect to other variables. The F/F and N/F differed significantly from the other two groups in that both were higher in percentage body fat and actual weight. In addition, with the exception of the N/F, percentage body fat increased with a corresponding increase in both actual weight and percentage standard weight. The

currently obese groups, the N/F and the F/F showed preference for loose style.

The statistical analysis showed that specific patterns evolve with respect to the interrelationship of variables. Each of the four groups will be discussed separately.

The normal group showed no specific patterns related to increasing age. Specific patterns were found in relation to an increase in percentage body fat, actual scale weight, increased anxiety, and vulnerability of boundaries. For the obese now normal, externality increased with increasing age, as did a preference for saturated colour. Saturated colour preference also related to increased percentage body fat, actual weight, and increased anxiety. Preference for loose style related to preference for concealing style and to an increase in anxiety.

The normal now obese group became more vulnerable with increased age. Specific interrelated patterns developed with regard to colour, fabric and style preferences, and a preference for tint was directly related to low Barrier. For the group who have always been obese, externality increased with increased age. Fewer distinct interrelated patterns emerged. As weight increased, however, so did a preference for shade and for concealing style, while saturated colour was associated with smooth textured fabric.

The remaining variables showed no differences among the group means and therefore only the results for the total group are reported.

General patterns have emerged regarding the interrelationships of colour, design and style. Strong colour contrast was associated with cool colour and with small design. Large design in fabric was associated with loose style in clothing, but small design was related to more fitted garments. A preference for rough texture was related to a preference for concealing garments, and conversely, smooth texture for revealing style.

A few interrelationships between colour, design and style variables, and the psychological variables became evident. Shade is directly associated with internality; strong contrast between design and background colour was related to low vulnerability, while weak contrast was directly related to both high Barrier and high vulnerability. Anxiety was directly related to externality and an increase in percentage standard weight. Externality was directly associated with low Barrier and an increase in percentage standard weight. High Barrier, on the other hand, related directly to a decrease in percentage standard weight and also to a high degree of vulnerability, suggesting that as percentage standard weight decreases, Barrier rises.

The D A P techniques indicated that obese persons can be identified by their figure drawings, as outlined by Kotkov and Goodman (1953). The former body image was still operative for those who had experienced a considerable weight loss, as well as for those who have had excessive weight gains.

The dream costume indicated that for this specific group of women the choice of costume was mostly of a concealing type, whether or not it was evening or daytime apparel. While all costumes were luxurious in fabric, workmanship or accessories, the women tended to think in terms of dress only and not in terms of a total costume.

The objectives delineated for the research have been satisfied. The theoretical framework received some support. Little has been discovered about the relationship of weight to psychological variables of the individual. Further study in this area may yield some information which would help individuals lose weight as well as maintain weight loss.

Recommendations

The following recommendations are made on the basis of this exploratory research.

1. The importance of maintaining a desirable weight throughout childhood and adolescence is vital since there appears to be a lag in body image perception for those who have gained or lost weight. This former image may cling to the individual for years and could affect the ability of any given individual to lose and maintain weight loss. For weight reduction groups the implication may be to help the individual change that body image by redefining body boundaries using methods which involve the use of sensory organs in conjunction with such devices as: mirrors to reveal the actual body configuration, the rubbing on of lotions, the use of hot and cold showers on the surface of the body, physical exercise and massage of the muscles to increase body boundary awareness.
2. In studies on obese individuals, it is suggested that weight histories be taken into account and used to divide the group for comparative purposes, since those who have experienced a weight change from non-obese to obese appear to react differently on certain variables than do those who have always been obese.
3. The Draw a Person Technique may prove valuable for weight reduction groups if used after weight loss to determine the degree of 'lag' in the perception of body size.
4. There was no relationship between percentage body fat and

actual weight for the group of women who became obese after 20 years of age. Research to determine if the fat is deposited subcutaneously or internally may provide valuable information in studies on obesity.

5. The strong relationship between Barrier and Penetration suggests that research in the area of body image and body cathexis could provide some interesting findings which in turn could be applied to obesity weight loss and weight loss retention.
6. Since certain patterns have emerged regarding the inter-relationships among fabric colour, design, texture and style, it is suggested that further studies be carried out to substantiate these findings.
7. Although research has shown that psychotic women chose saturated colour to reinforce weak body boundaries, there is no evidence in this study to show that normal women use this device to strengthen body boundaries. Further research is needed to confirm or deny that colour and style are used to reinforce body boundaries.

# BIBLIOGRAPHY

# BIBLIOGRAPHY

Baer, A. Perception of line and design in clothing. Doctoral dissertation, Utah State University, Logan, Utah. 1970.

Berman, S., & Laffel, J. Body type and figure drawing. Journal of Clinical Psychology, 1953, 9, 368-370.

Berscheid, E., Walster, E., & Bohrnstedt, G. Body Image. Psychology Today. November 1973, pp. 119-123; 126-130.

Brett, J. Fashion opinion leadership related to selected perceptual and personality variables. Unpublished master's thesis, University of Alberta, 1973.

Bruch, H. Eating disorders. New York: Basic Books Inc. 1973

Brunight, R.G. & Marden, P.G. Social correlates of weight in an aging population. In N. Kiell (Ed.), The psychology of obesity. Springfield, Illinois: Charles C. Thomas. 1973, p. 102.

Bychowski, G. Neurotic obesity. In N. Kiell (Ed.), The psychology of obesity. Springfield, Illinois: Charles C. Thomas. 1973, p. 181.

Caddel, K.W. The relation between clothing traits and color selection of fabric as found in a group of students at Texas Technological College. Unpublished master's thesis, Texas Technological College, Lubbock, Texas, 1966.

Cappon, D. Eating, loving and dying. University of Toronto Press, 1973

Cattell, R.B. & Scheier, I.H. Handbook for Institute of Personality and Ability Testing anxiety scale questionnaire. Institute of Personality and Ability Testing, Champaign, Illinois, 1963.

Compton, N. Personal attributes of color and design preferences of clothing fabrics. Journal of Psychology, 1963, 54, 191-195.

Compton, N. Clothing fabric preferences in relation to selected physical and cultural background factors of a group of Maryland homemakers. Home Demonstration News. Cooperative Extension Service. University of Maryland, June, 1963.

Compton, N. Body image boundaries in relation to clothing fabric and design preferences of a group of hospitalized psychotic women. Journal of Home Economics, 1964, 56, 40-45.

Compton, N. Compton Fabric Test Manual, special report 19. Agricultural Experiment Station. Utah State University, 1965.

Compton, N. Development of a fabric preference test. Perceptual and Motor Skills, 1966, 22, 287-294.

Compton, N. Personality factors which influence clothing fabric selection by delinquent girls. Cooperative Research Project No. S-372. Utah State University, 1966.

Compton, N. Body perception in relation to anxiety among women. Perceptual and Motor Skills. 1969, 28, 215-218.

Cooley, C.H. Human nature and social order. New York: Schocken, 1964.

Coser, L.A. Masters of sociological thought. New York: Harcourt Brace Jovanovich Inc., 1971

Davis, B. Body concepts and clothing behaviour of business men. Unpublished master's thesis. University of Alberta, 1977.

Dowdeswell, V.E. Inferred values of clothing related to adjustment among pregnant women. Unpublished master's thesis. Utah State University, 1972.

Fisher, S. A further appraisal of the body boundary concept. Journal of Consulting Psychology, 1963, 27 (1), 62-74.

Fisher, S. Sex differences in body perception. Psychological Monographs: General and Applied, 1964, 78 (14 whole No. 591).

Fisher, S. Body experience in fantasy and behavior. New York Appleton-Century-Crofts Meredith Corporation, 1970.

Fisher, S. Body consciousness: you are what you feel. New Jersey: Pretice Hall Inc., Englewood Cliffs, 1973

Fisher, S. & Cleveland, S. Personality, body perception and body image. In S. Wapner & H. Werner (Eds.), Body percept New York: Random House, 1965.

Fisher, S. & Cleveland, S. Body image and personality (2nd ed.). New York: Dover Publications, Inc., 1968.

Fleming, J., Body image boundaries and clothing fabric preferences of young women with physical disabilities. Unpublished master's thesis, Utah State University, 1968.

Gluckman, M.L. & Hirsh, J. The perception of body size. In N. Kiell (Ed.), The psychology of obesity. Springfield, Illinois: Charles C. Thomas, 1973, p.48.

Goldblatt, P., Moore, M. & Stunkard, A. Social factors in obesity. In N. Kiell (Ed), The psychology of obesity. Springfield, Illinois: Charles C. Thomas, 1973, p.57.

Gormanous, G.K. & Lowe, C.W. Locus of control and obesity. Psychological Reports, 1975, 37, 30.

Gould, J.& Kobl (Eds.), A dictionary of social sciences. New York: The Free Press, 1964.

Hall, C.S. & Lindsey, G. Theories of personality (2nd ed.). New York: John Wiley and Sons, Inc. 1970.

Hammer, F.H. The clinical application of projective drawings. (2nd printing). Springfield, Illinois, 1967.

Hjelle, L.A. Social desirability as a variable in locus of control scale. Psychological Reports 1971, 28, 807-816.

Holt, H. & Winick, C. Group psychotherapy with obese women. In N. Kiell (Ed.), The psychology of obesity. Springfield, Illinois: Charles C. Thomas, 1973. p.227.

Holtzman, W., Thorpe, J., Sivortz, J. & Herron, E. Inkblot perception and personality. Austin, Texas: University of Texas Press, 1961.

Holtzman, W.H. Holtzman inkblot technique group administration by slide projection. New York: The Psychological Corporation, 1964.

Horney, K. Neurotic personality of our times. New York: W.W. Norton and Company, 1937.

Humphris, M.R. Clothing fabric color, dress preferences and tattooing among delinquent and non-delinquent girls. Unpublished master's thesis, Utah State University, 1968.

Iredell, R. Drawing the nude. Tustin, California: Foster Art Service, Inc, 430-W. 6th St.

James, W.H. Comparisons of American and Canadian residents on locus of control and other personality dimensions. Summary of research paper presented at the annual meeting of the American Psychological Association, Montreal, 1973.

James, W.H. & L.F. Shepel. A restandardization and factor-analytic study of the Likert Method of measuring locus of control. Summary of a research paper presented at the annual meeting of the American Psychological Association, Montreal, 1973.

Joe, V.C. Review of the internal-external control construct as a personality variable. Psychological Reports, 1971, 28, 619-640.

Kernaleguen, A.P. Creativity level, perceptual style and peer perception of attitudes towards clothing. Doctoral dissertation, Utah State University, 1968.

Kernaleguen, A.P. Selected perceptual and personality variables related to orientation in dress and adornment. Unpublished research, Utah State Research grant, No. U-500, 1970.

Kernaleguen, A.P. Selected perceptual and personality variables related to orientation to clothing. Perceptual and Motor Skills, 1973, 36, 843-848.

Kotkov, B. & Goodman, M. The draw a person tests of obese women. Journal of Clinical Psychology. 1953, 9, 362.

Lao, R.C. Internal-external control and competent and innovative behavior among Negro college students. Journal of Personality and Social Psychology, 1970, 14, 263-270.

Mayer, J.M. Overweight causes, cost and control. New Jersey: Prentice-Hall Inc., 1968.

Mayer, J.M. & Harris, T.G. Affluence: The fifth horseman of the apocalypse. Psychology Today, 1973, 2, 58.

Mead, G.H. Mind, self and society. Chicago: University of Chicago Press, 1934.

Megargee, Edwin I. Relation between barrier scores and agressive behavior. Journal of Abnormal Psychology, 1965, 70, 4, 307-311.

Metropolitan Life Insurance Company. New weight standards for men and women. Statistical Bulletin 40, 1959.

Minium, E.W. Statistical reasoning in psychology and education. New York: John Wiley and Sons, Inc., 1970, p.133 p.133.

Murray, D.C. Preferred versus nonpreferred treatment, and selfcontrol versus determination raising as a treatment of obesity: A pilot study. Psychological Reports, 1976, 38, 191-198.

Nutrition Canada. National survey. A report by Nutrition Canada to the Department of National Health and Welfare. Ottawa: Information Canada, 1973.

Patton, J.F. & Frietag, C.B. Correlation study of death anxiety, general anxiety and locus of control. Psychological Reports, 1977, 40, 51-54.

Pawlicki, R.E. Effects of self directed behavior-modification on a Measure of locus of control. Psychological Reports, 1976, 39, 319-322.

Phares, E.J. Changes in expectancy in skill and chance situations. Dissertation Abstracts 1956, 16, 579-580.

Phares, E.J. Internal-external control as a detriment of amount of social influence exerted. Journal of Personal and Social Psychology. 1965, 2, 642-647.

Rathburn, E.N. & Pace, N. Studies on body composition. The determination of total body fat by means of body specific gravity. Journal of Biological Chemistry. 1945, 158, 667.

Rotter, J.B. Social learning and clinical psychology, New Jersey: Prentice-Hall, 1954.

Rotter, J.B. 1971. External and internal control. Psychology Today, 1971, 1, 37.

Sears, N.J. Fabric preferences as related to selected personality characteristics of delinquent and non-delinquent adolescent girls. Unpublished master's thesis, The University of North Carolina, 1966.

Secord, P.F. & Jourard, S.M. The appraisal of body cathexis and the self. Journal of Consulting Psychology, 1953, 17, 5.

Segal, S.M. & DuCette, J. Locus of control and pre-marital high school pregnancy. Psychological Reports, 1973, 33, 887-890.

Schacter, S. & Gross, L.B. Manipulated time and eating behavior. Journal of Personality and Social Psychology. 1968, 10, (2), 98-106.

Sheldon, W.H. Stevens, S.S. & Tucker, W.B. The varieties of human physique. New York: Hefner Publishing Co., 1963.

Sherman, M.F., Pelletier, R.J. & Ryckman, R. Replication of the relationship between dogmatism and locus of control. Psychological Reports, 1973, 33, 749-750.

Stunkard, A.J. The pain of obesity. Palo Alto, California: Bull Publishing Co. 1976.

Stunkard, A.J. & Koch, C. The interpretation of gastric mobility: apparent bias in reports of hunger by obese persons. Archives of General Psychology. 1964, 11(1), 74-82.

Stunkard, J. & Mendelson, M. Obesity and the body image. In N. Kiell (Ed.), The psychology of obesity. Springfield, Illinois: Charles C. Thomas, 1973, p.41.

Siegel, S. Nonparametric statistics for the behavioral sciences. New York: McGraw-Hill Book Company In., 1956.

Thomas, D.W. & Mayer, J. The search for the secret of fat. Psychology Today, 1973, 2, 74.

Torreta, D.M. Some esthetic perception of clothing fabrics in relation to body image and psychological security. Unpublished doctoral dissertation, Utah State University, 1968.

Willis, F. The nude. Tustin, California: Foster Art Service, 430-W. 6th St.

Young, C.M. Predicting specific gravity and body fatness in young women. Journal of the American Dietetic Association. 1962, 40, 102-107.

Young, C.M. Body composition of older women. Journal of the American Dietetic Association. 1963, 43, 344-348.

Young, C.M. Predicting specific gravity and body fatness in "older" women. Journal of the American Dietetic Association. 1964, 45, 333-338.

Young, C.M. Personal communication (letter), August 2, 1974.

Zeigler, H.P. The sensual feel of food. Psychology Today. 1975, 9, 62.

# APPENDICES

# APPENDIX A

## GENERAL INSTRUCTIONS TO SUBJECTS

## General Instructions to Subjects

Nutrition Canada has found that many Canadians, especially women, have weight problems. The purpose of the study is to assess women on a wide array of variables from preferences in clothing to how they view themselves and the world around them.

All answers will be coded and no names will be used in the analysis of data. The sample will be treated as a group and in this way all results will be anonymous and confidential.

Skinfold measurements will be taken and it would be helpful but not necessary, if slacks or two piece outfits could be worn to facilitate the taking of these measurements.

# APPENDIX B

## GENERAL INFORMATION QUESTIONNAIRE

General Information Questionnaire

Code#_____

1. NAME_____
   Please Print
2. Address_____
   _____
   _____
3. Phone Number_____
4. Age_____yrs.
5. Weight at 21-22 years of age_____ lbs.
6. What is your approximate weight now?_____ lbs.
7. What is the greatest weight you have ever been?_____lbs.
8. Do you consider yourself (1) thin (2) average weight or (3) overweight. (Circle answer).

   Answer questions 9 and 10 only if you have had a weight problem.

9. When did your weight problem first begin? (Please state approximate age).
   a. childhood _____.
   b. adolescence _____.
   c. after age of 20 _____.
10. If you have ever been much overweight and now have lost weight
    (a) What was your greatest weight _____?
    (b) At what age did you begin to lose weight _____?
    (c) How many pounds have you lost _____?

(d) How long have you maintained this weight loss _____?

(e) Have you reached your goal weight or comfortable weight _____?

(f) Are you presently on a weight reduction program

Yes No (Circle answer)

# APPENDIX C

## HEIGHT, WEIGHT AND SKINFOLD MEASUREMENTS

# Height, Weight and Skinfold Measurements

Code#_____

## Height and Weight Measurements

1. Wrist measurement = _____".
2. Height = _____' _____".
3. Actual Weight = _____lbs.
4. Predicted Weight = _____lbs.

## Skinfold Measurements

($X_1$) pubic skinfold = _____mm.

($X_2$) umbilicus = _____mm.

($X_4$) chin = _____mm.

($X_6$) chest = _____mm.

($X_{10}$) supra iliac = _____mm.

# APPENDIX D

## RELEASE FORM

Release Form

Code#_____

The procedure for this research has been explained to me and I have volunteered to participate in this study.

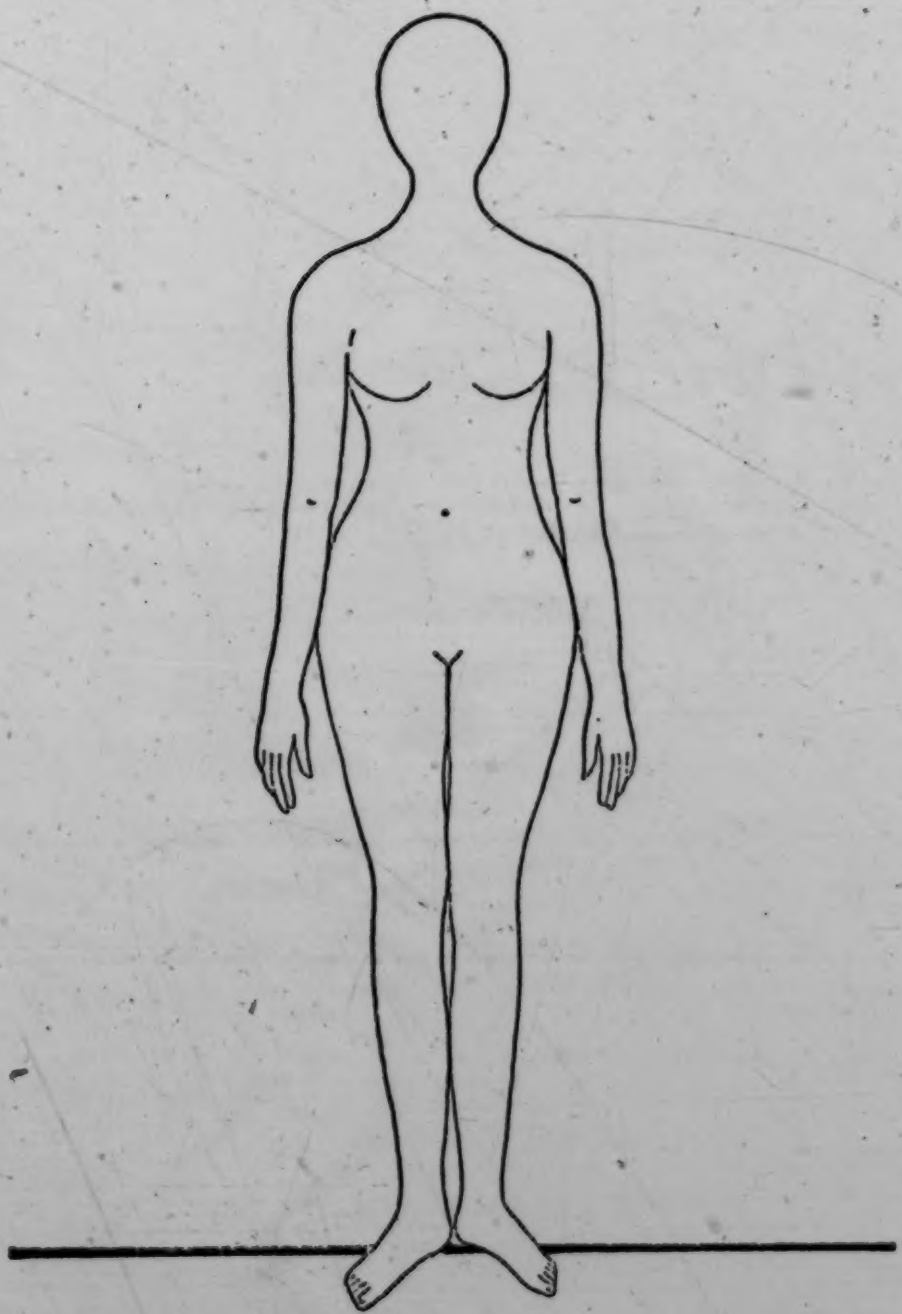
I received two dollars ($2.00) to cover parking expenses.

Signed _____

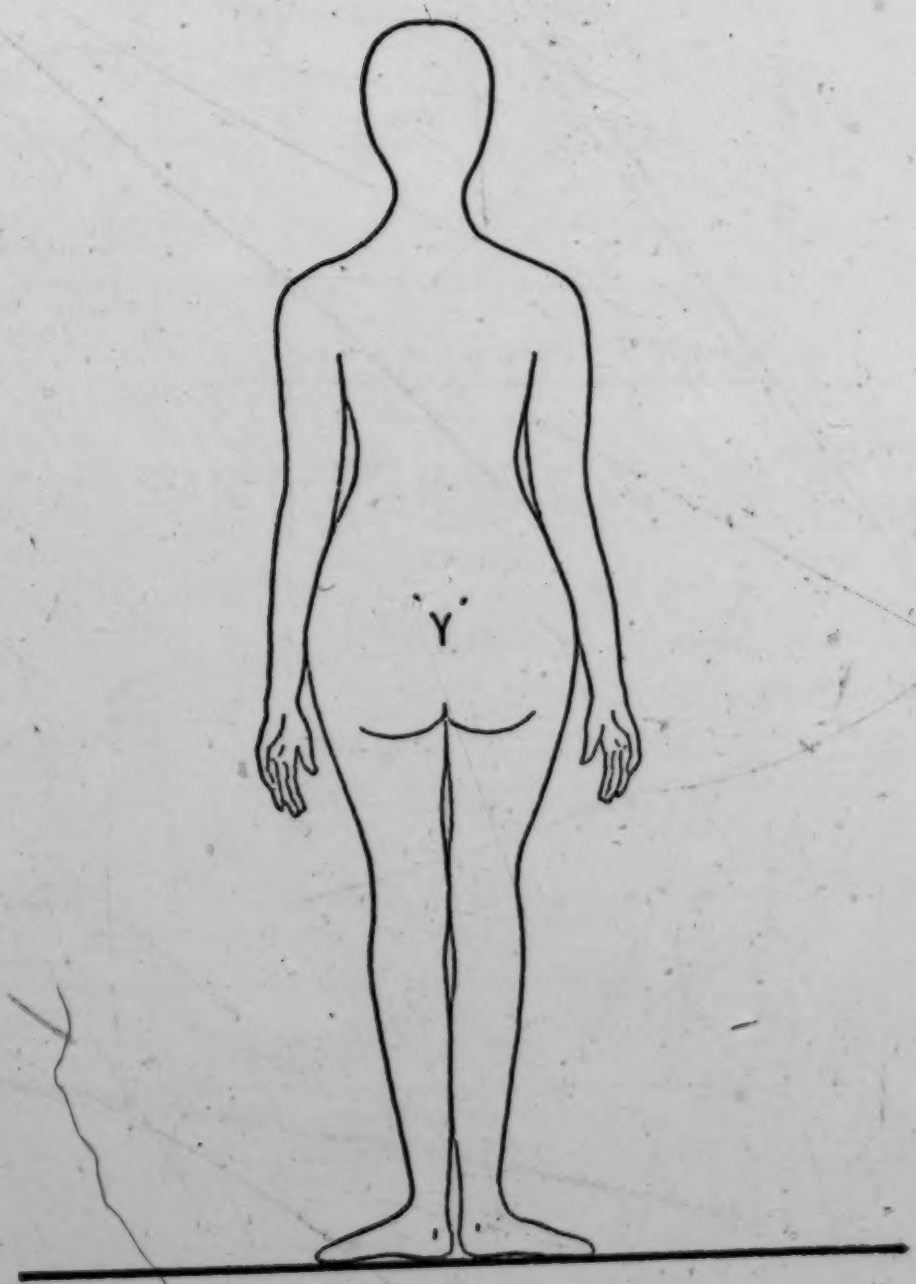
# APPENDIX E

## FRONT, BACK AND SIDE VIEWS OF OUTLINE FIGURES OF FEMALE FORM FOR THE DRAW A PERSON TEST

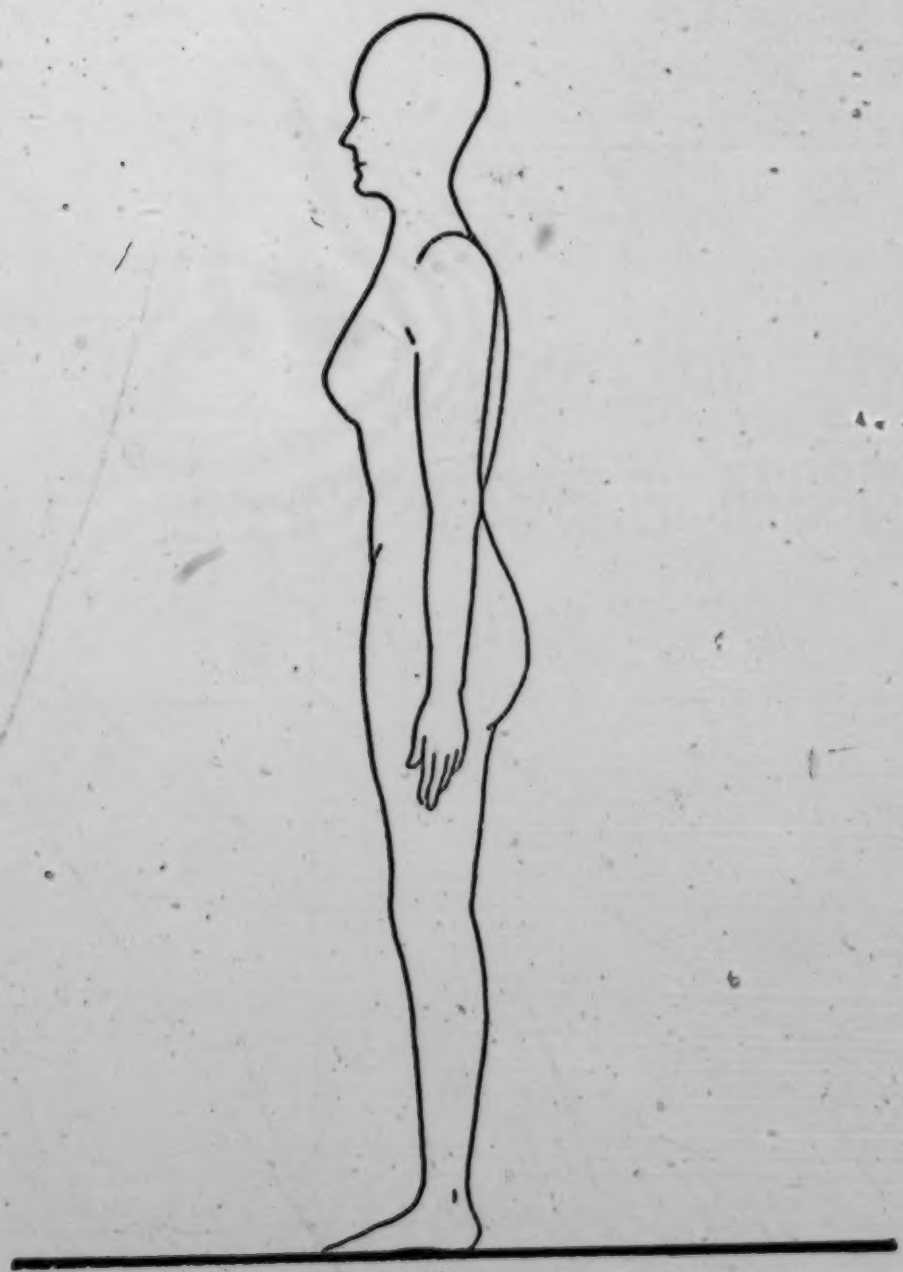
Front View of Model Figure for D A P Test



Back View of Model Figure for D A P Test



Side View of Model Figure for D A P Test

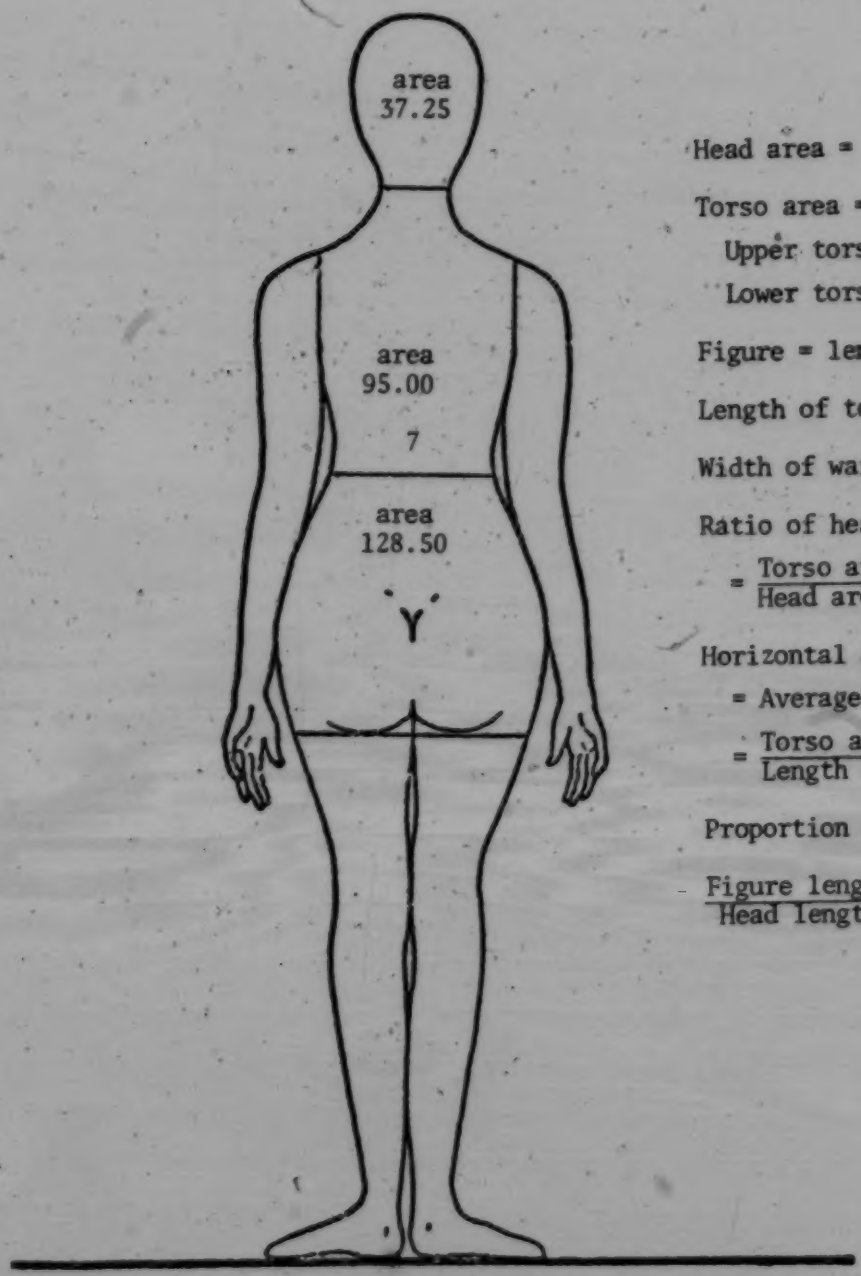


# APPENDIX F

## AREAS, RATIOS AND PROPORTIONS USED FOR MARKING D A P TEST

# AREAS, RATIOS AND PROPORTIONS USED FOR MARKING D A P TEST

Back view of model counted in 1/8 squares




Head area = 37.25

Torso area = 223.50

Upper torso = 95.00

Lower torso = 128.50

Figure = length = 57

Length of torso = 25

Width of waist = 7

Ratio of head to torso

$$= \frac{\text{Torso area}}{\text{Head area}} = \frac{223.50}{37.25} = \frac{6}{1}$$

Horizontal area

= Average width of torso

$$= \frac{\text{Torso area}}{\text{Length of torso}} = \frac{223.50}{25} = \frac{8.94}{1}$$

Proportion of figure

$$\frac{\text{Figure length}}{\text{Head length}} = \frac{57}{8} = 7.12 \text{ heads tall}$$

# APPENDIX - G

## FORMULI FOR DETERMINING PERCENTAGE STANDARD WEIGHT AND PERCENTAGE BODY FAT FOR YOUNG WOMEN AND OLDER WOMEN

## Formuli for Determining Percentage Standard Weight and Percentage Body Fat for Young Women and Older Women

Percentage Standard Weight is the percentage weight above or below the Standard Weight of the subject using the formula:

$$\text{Percentage standard weight} = \frac{\text{actual weight}}{\text{predicted weight}} \times 100$$

Specific Gravity is density of the body determined by the formula for young women: (Young, 1962).

$$S.G. = 1.0884 - .0004231[X_1] - .0003401[X_2] =$$

when $X_1$ = pubic skinfold

$X_2$ = percentage standard weight

or

the formula for older women: (Young, 1964)

$$S.G. = 1.05555 - .0007109[X_2] - .0012239[X_4] - .0007728[X_6] + .0004196[X_{10}] =$$

when $X_2$ = umbilicus

$X_4$ = chin

$X_6$ = chest

$X_{10}$ = supra iliac

Percentage body fat is the fatness of a subject predicted by the use of the Rathbun-Pace formula: (Rathbun-Pace, 1945).

$$\text{Percentage body fat} = 100 \left| \left( \frac{5.548}{\text{Specific Gravity}} \right) - 5.044 \right|$$

# Vita

NAME: Muriel Isabella Avery (née Plaxton)

PLACE OF BIRTH: Prince Albert, Saskatchewan, Canada.

YEAR OF BIRTH: 1926

POST-SECONDARY EDUCATION AND DEGREES:

The University of Saskatchewan,
Saskatoon, Saskatchewan, Canada
1944-1948 B. H.Sc.

The University of Saskatchewan,
Saskatoon, Saskatchewan, Canada.
1955-1956 Professional Teaching Certificate.

The University of Alberta,
Edmonton, Alberta, Canada.
1978 M.Sc. Clothing and Textiles.

RELATED WORK EXPERIENCE:

Teacher of Clothing and Textiles and Food Science
with the Calgary Board of Education, Calgary, Alberta,
since 1956.